SIMRAD

PRO PROFESSIONAL SERIES

Simrad Navigation Systems
ECDIS, PLECDIS, ECS and GPS

WWW.SIMRAD-YACHTING.COM/PROFESSIONAL

Simrad Professional Navigation Systems

SIMRAD PROFESSIONAL

The Simrad Professional portfolio offers a comprehensive range of marine electronic products spanning instruments, autosteering, gyro compasses, navigation systems, radar, communications and safety. Simrad Professional products are synonymous with sophistication and rugged reliability, providing tried and trusted solutions for a wide range of professional applications. With more than 60 years experience of developing quality products, Simrad are well positioned to meet the needs of today's professional mariners.

SIMRAD PROFESSIONAL NAVIGATION SYSTEMS

Simrad professional products include a wide range of sophisticated, approved navigation systems, electronic chart systems and echo sounders to ensure optimal safety and performance. Simrad navigation systems are built on years of experience within steering, charting, navigation and safety. Already in 1985 Simrad collaborated with the Norwegian Hydrographic Office to develop a pre-ECDIS standard charting system. The CS68 ECDIS has been built on this 20-year charting history and developed in close cooperation with shipping companies and high speed craft navigators. The new NSE seriesis tailor made for smaller high speed boats, coasters and Fishing vessels.

Simrad CS68 ECDIS

The most reliable ECDIS (Electronic Chart Display and Information System) in the world. With the CS68 ECDIS system, we are the only ECDIS supplier in the world that offers an approved ECDIS that runs on 24VDC. This makes the CS68 also very suited for smaller vessels under 3000 tons. with quick access to the most important functions. We have also created a unique voice alarm system, which makes it possible to separate ECDIS alarms from other alarms on the bridge.
The Simrad CS68 ECDIS and PLECDIS systems are developed in Norway for use under the roughest conditions. The system is also approved by DNV for use on all SOLAS ships and other vessels that must carry an ECDIS system.
A cost saving ECS version for use on board vessels that want ECDIS functionalities, but are not required to carry a full ECDIS system onboard, is also available.

CS68 ECDIS 23inch

CS68 KEY FEATURES

- Hardware and software are type approved according to the IMO and the Marine Equipment Directive (Wheelmark) United States Coast Guard USCG approval pending.
- ENC/S57, S63 and C-map SENC CM93/3 support
- Chart update online or through CD/DVD/USB flash drive.
- Dynamic chart licensing.
- Radar overlay option
- AIS Class-A and Class-B support. AIS filter and two way communication
- Double trip counter
- SIMRAD Backup Manager
- Relay interface to ship's main alarm centre.
- Dual monitor output
- 19", 20.1", 23" or 27" Wide approved ECDIS displays

Part Number	Description
000-00018-001	CS68 ECDIS system, 24 V DC system without monitor
000-00018-003	CS68 ECDIS system, 24 V DC system with monitor
000-00044-001	Radar overlay kit
26053231	COP10-CS6x Remote operator panel
26053355	COP20 Operator panel designed for mounting in the chair's armrest
26053207	COP30 Illuminated keyboard and mouse for all CS chart systems.
26056713	ECDIS external ON/OFF switch

Optional remote control COP20

Optional remote control COP10

COP10 mounted in the armrest of the chair.

Simrad PLECDIS™

Simrad Paperless ECDIS solution. One of the main features of ECDIS is to be able to go paperless, using high quality ENCs (Electronic Navigational Charts) for safer navigation. Combining a CS68 ECDIS system with backup (Simrad PLECDIS™). The navigator can utilize a fully approved and redundant high class electronic navigation system that allows the ship to operate without paper charts on board. This provides crew and owners benefits in safety, cost and efficiency, and enables automatic updates of charts everywhere.

PRO ECDIS / PLECDIS™ KEY FEATURES

- Seamless zooming
- Quick route function
- Preferred turn rate in every turn
- Head up display
- True Route Navigation
- Logbook with voyage play back
- AIS and ARPA target overlay
- Automatic chart scale
- Vessel shown in actual size
- Ship's turning radius shown in route planning
- Tide calculation
- Fast vessel update rate
- Quick level change of chartclutter
- Variable range and bearing line
- Tracking of other vessels
- Man Over Board function
- Unique tracking feature

▶ CS68 ECDIS 27 inch Wide Screen

▶ MC50 Marine Computer

▶ Shock absorbers ensure optimal performance.

▲ The CS68 type approval fulfills the requirements to sail "paperless".

Part Number	Description
000-00018-004	CS68 PLECDIS system, 24 V DC system without monitors
000-00018-002	CS68 PLECDIS system, 24 V DC system with monitors
000-00044-001	Radar overlay kit
26053231	COP10-CS6x Remote operator panel
26053355	COP20 Operator panel designed for mounting in the chair's armrest
26053207	COP30 Illuminated keyboard and mouse for all CS chart systems.

OPERATIONAL MODES

The Simrad CS60 series ECDIS/ECS systems have the unique capability of combining both a monitoring and a planning mode. All safety functions are continuously monitored even when route planning.

MONITOR MODE

In monitoring mode, the position of the vessel is displayed in real time on the chart. The ship's outline and size is displayed with actual vessel heading, a COG and SOG vector and actual track. The vessel can be displayed in relative or true motion.

HIGH PERFORMANCE MARINE COMPUTERS

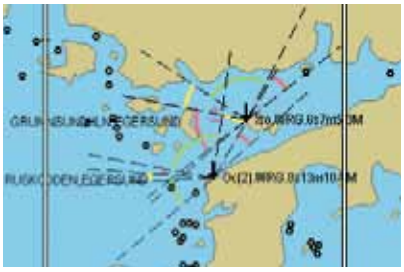
All Simrad Marine Computers are made to serve the demands of the professional marine industry and are not on the shelves industry PCs which are used by most other manufacturers. Simrad believes that a vessel's primary navigation system deserves better. The computers are type approved according to IEC 60945 and the chart systems carry a 2 year warranty to back it up. All systems come standard with a total system recovery feature, so in a case of breakdown the system can be restored to its previous state after repairs have been performed.

ARPA RADAR INTERFACE

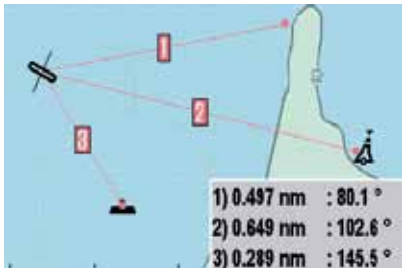
By activating the interface to an ARPA radar, moving targets and operator selected "fixed points" can be displayed. Other vessels are then shown in real time on the chart, color coded depending on possibility for collision.

PLANNING MODE

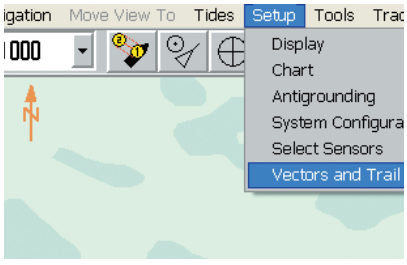
Planning of a route and the definition of waypoints is very simple using either a trackball or numeric keyboard. A pan function enables the operator to move around in the chart. To view any position in the world, the "Pan To" function can be used for viewing the chart in a specific position in Latitude, Longitude or around the vessel's own position or a waypoint. Planned routes can be stored and recalled whenever necessary.



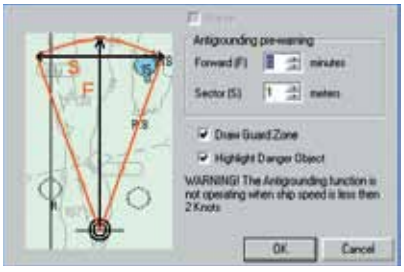
▶ Zooming in the chart may be performed in numerous ways. Also as a defined zoom area.



▶ Fixed range markers are available to ease and secure navigation in narrow waters.



▶ Menu bar with icons and large characters.



▶ An Antigrounding feature, detecting obstacles in the chart, may be set to meet user requirements.

▶ AIS targets are shown in real time and in real size.

▶ The only ECDIS with voice warnings to separate the alarms from the swarm of other constant beeping buzzers.

Simrad CS66 ECS

Flexible ECS System with ECDIS software. Simrad is not only offering approved ECDIS systems (Electronic Chart Display and Information System) for professional users, as professional solutions are also provided by the CS66 for smaller vessels including harbour vessels and yachts. The Simrad ECS systems come with the same professional core software as our ECDIS, as well as industry grade professional computers. The flexibility around space available and monitor type and size is bigger with an ECS system than with an ECDIS.
We cover the complete range of screens from 10" to 23" Wide for commercial vessels.

▶ CS66 ECS 19inch

PRO CS66 KEY FEATURES

- Hardware approved to IEC 60945 standard
- Software complies with ECDIS standard
- Advanced route planning not found in regular chart plotters
- Flexible storage of tracks, symbols, objects and log files
- Advanced sensor filters
- Anti grounding system
- Short way to coming regulatory ECDIS
- Very low life cycle cost

Part Number	Description
000-00017-001	CS66, 8 channel, 24 V DC system without monitor. Parts included: MC50 MKII Marine computer
000-00044-001	Radar overlay kit
26053231	COP10-CS6x Remote operator panel
26053355	COP20 Operator panel designed for mounting in the chair's armrest
26053207	COP30 Illuminated keyboard and mouse for all CS chart systems.

▶ A WIDE RANGE OF NAVIGATION SYSTEMS

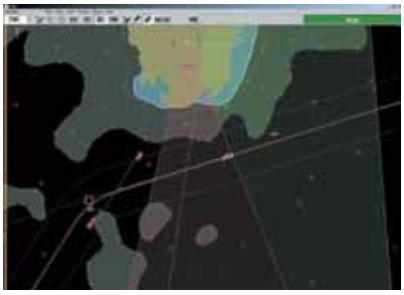
▶ CS68 ECDIS

▶ CS68 PLECDIS™

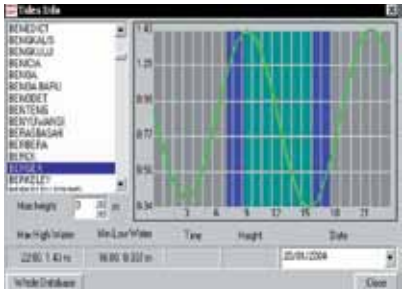
▶ CS66 ECS

▲ Hook your ECDIS/ECS up to the internet and download Notice to Mariners wherever you are (depending on user defined service provider)

▲ Two modes of quick and easy route planning.



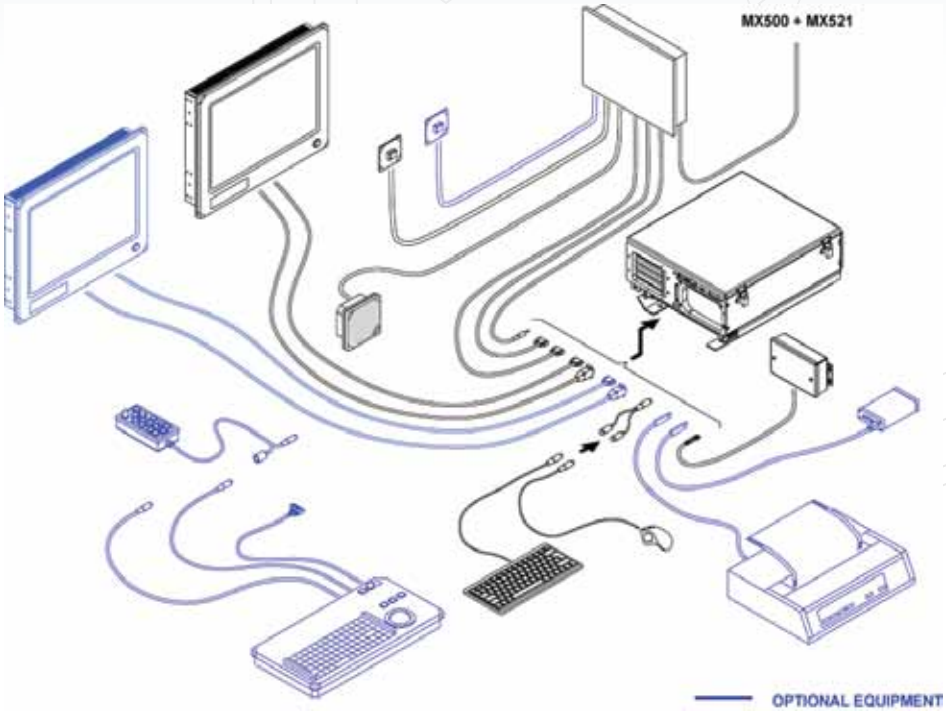
▲ Several display pallets available, night pallet with filled light sectors shown here.



▲ Always up to date tide tables.

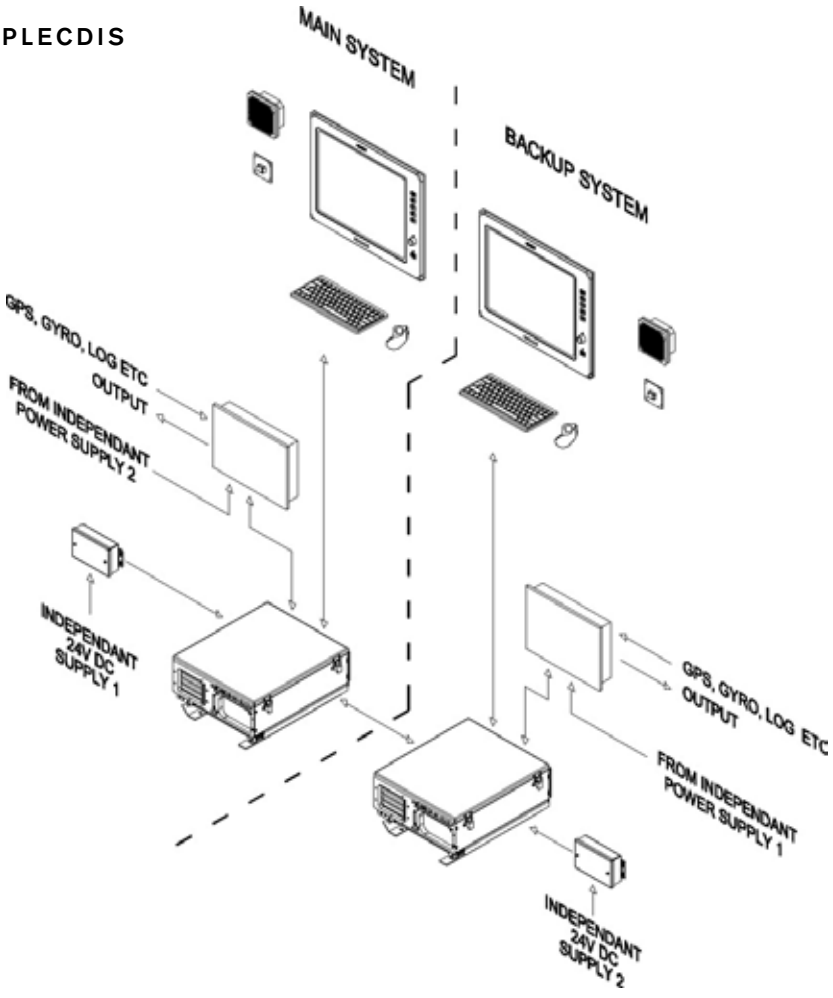
ELECTRONIC CHART SYSTEMS: CS68 ECDIS

- MC50 marine computer
- Marine colour monitor
- FB200 filter box
- Chart interface unit
- Cherry keyboard
- Logitech TrackMan® wheel
- Splitter cable for TrackMan wheel and keyboard
- Loudspeaker
- Alarm reset unit



ELECTRONIC CHART SYSTEMS: PLECDIS

- 2 x MC50 marine computers
- 2 x Colour monitors (19", 20.1", 23" or 27")
- 2 x FB200 filter boxes
- 2 x Chart interface units
- 2 x Cherry keyboards
- 2 x Logitech TrackMan® wheels
- 2 x Loudspeakers
- 2 x Alarm reset units
- 1 x 10 m crossed network cable
- 1 x PLECDIS™ plaque


MAIN SYSTEM
BACKUP SYSTEM
GPS, GYRO, LOG ETC OUTPUT
FROM INDEPENDANT POWER SUPPLY 2
INDEPENDANT 24V DC SUPPLY 1
GPS, GYRO, LOG ETC OUTPUT
FROM INDEPENDANT POWER SUPPLY 1
INDEPENDANT 24V DC SUPPLY 2

NEW All-in-one ECS Simrad NSE

For sophisticated performance in network applications; the new NSE provides 8" and 12" display options and offers the ultimate compact Patrol / Navigation tool for smaller vessels and tenders.

Rotary controller:
Perfectly intuitive for fine or course control of gain, zoom and menu with push to enter functionality

Alphanumeric keypad
Quickly enter waypoint, route and track information with precision

USB and Flash Drive
Record under water surveillance, screen scots, camera images directly to the medium of your choice for report files

Programmable QuickTouch keys
Touch a button and make things happen...

PRO SIMRAD NSE FEATURES

Lightning Fast, All-in-one Chartplotter

Radar, Chart, Sonar, Autopilot controller, CCTV monitor, Instrument monitoring / The high power processing of NSE lets you zoom, pan and navigate with virtually zero chart lag time

2D, 3D and shaded relief capability presentation modes

All New Simrad High Performance GS15 GPS 5Hz Antenna with NMEA2000/SimNet connections

Award Winning Echosounder and Radar Technology

BSM-1 Broadband Sonar for excellent target separation and deep water penetration

BR24 Broadband Radar & HD Digital Domes and Arrays for superior image clarity and definition

New Simrad NSE Control Interface for Easy Operation

Rotary Controller, Cursor Pad, and an Alphanumeric Keypad for flexible & solid input control

QuickTouch for quick and easy page access and recall

Minimal time required to learn operation with on-screen menus and prompts

Elegant Design, Brutally Strong Simrad Construction

Classic Simrad design with flush mount option compliments any helm design

Substantial aluminium housing, waterproof connections, and a robust bracket mount all designed for harsh environments

Complete Flexibility – with "Masterless" Networking

Share Charting, Echosounder and Radar information across multiple units

"Masterless" system - Any networked unit can operate independently. Network switch may be required

SimNet plug and play data networking for NMEA2000 compatible sensors & Instrumentation

Video input and output for display of video or navigation data where you want it

Brilliant, Low Power LED Display Technology

A "no compromise", brightest in class SunView™ LED Display

100% night time dimmable back lighting

NSE12 is industry first 12" MFD with high resolution XGA display

Large readable fonts for clear visibility

Part Number	Description
AA010145	NSE8 Multifunction Display (ROW Version)
AA010147	NSE12 Multifunction Display (ROW Version)

Part Number	Description
000-0125-25	GS15 Antenna with 4m Micro-C to SimNet Cable
000-0132-031	NEP-1 Five port ethernet expansion port.

INTEGRATE EVERYTHING

- AIS
- Autopilot
- Broadband Sounder™
- High Speed GPS
- NMEA 2000 Data

SIRIUS

C-ZONE

- SIRIUS® Marine Weather
- Digital Switching
- Video
- Structurescan™ Sonar Imaging
- HD Digital Radars
- Broadband Radar™

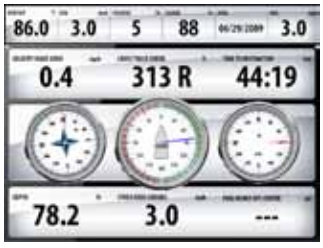
DIRECT ACCESS TO FEATURES WITH THE PRESS OF A BUTTON

NAV

- Emphasis is on "clear and easy to read". The position and steer screen offer concise information displayed in large fonts and simple graphics.

PAGES

- The Pages utility is Command Central for frequently used options and tools. Display and edit waypoints, routes and tracks as well as saved log files. AIS, Alarms and GPS status pages are easily accessed.



INFO

- Pre-configured gauge displays show vessel, environmental and navigation information in digital, analogue or bar format. Optional video inputs complete your NSE system.

INFO

- **AIS**

Integrate with Simrad AI50 or NAIS-300 Class B AIS Systems to see and be seen. Overlay AIS-equipped vessel information on chart and radar displays.

INFO

- **SimNet & N2K**

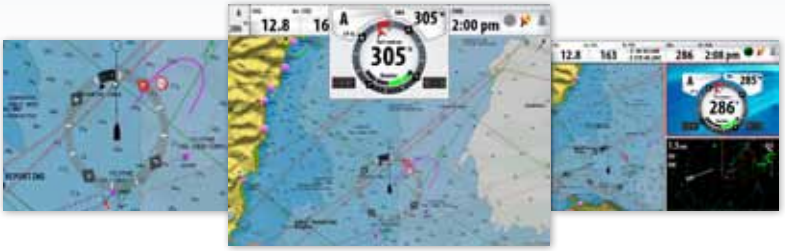
SimNet makes data sharing and system control easier and more flexible than ever before. Integrate Simrad autopilot, instruments, VHFs, sensors or any NMEA2000 engine or device to the intelligent SimNet backbone.

INFO

- **Video**

Simrad NSE has both video input and video output capability. Two video inputs are available with the included RCA/NMEA cable.Output your Simrad NSE to any remote display or large screen via DVI connection port.

DIRECT ACCESS TO FEATURES WITH THE PRESS OF A BUTTON



▲ Combine charting, pilot and vessel pages for unprecedented vessel control

CHART

▲ Premium Charts Embedded

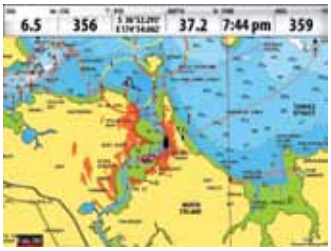
- Award-winning Navionics Charts include seamless chart detail, satellite photos and 3D
- View depths and elevations in 3-dimensions, with optional satellite photo overlay
- Port Services & Points of Interest. Detailed information, including phone numbers, for services and points-of-interest.

▲ Upgrade to Navionics Platinum Plus™

CHART

PRO **AUTOPILOT**

- NSE 2.0 software combines the world's best performing autopilot system with brilliant, Best in Class NSE displays. Simply network an NSE8 or NSE12 display with a Simrad autopilot system and get full autopilot functionality, with or without an autopilot control display. Engineered to benefit both "space-challenged" dash layouts and multi-station expanded systems, NSE 2.0 autopilot integration offers tremendous flexibility.
- Fully control your Simrad Autopilot from an NSE8 or NSE12 display
- Alter course with the Rotary Controller or Cursor Pad
- Dedicated Standby / Auto key and Pilot Status indicators allow safe, easy Pilot operation
- The NSE performs all the functions of an AP24 or AP28
- The NSE can replace or work together with an autopilot controller
- Fully configure the Autopilot from the NSE display



CHART

▲ GS15 High Speed GPS Antenna

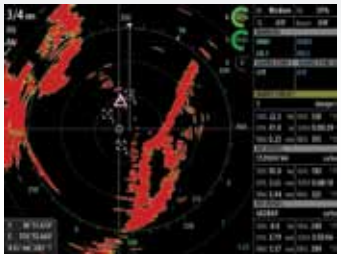
- Advanced 5Hz performance with a true update rate of 5 times per second for best in class position data during acceleration and high speed manoeuvres
- The Simrad GS15 works with SimNet and NMEA 2000® networks for enhanced location accuracy and improved satellite-signal fix
- WAAS and EGNOS

▲ GS15

INFO

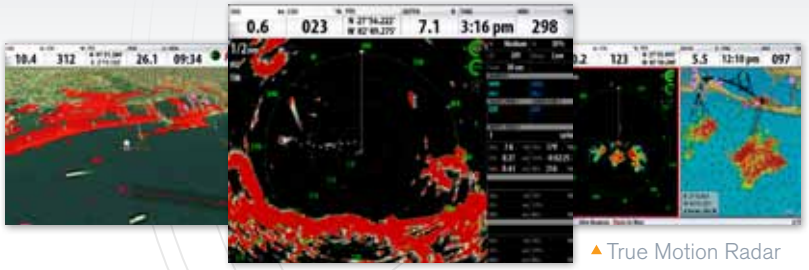
PRO **DIGITAL SWITCHING**

- NSE 2.0 breaks new ground with support for Czone™ digital switching from BEP Marine. Czone™ digital switching offers a new paradigm for cost effective, control and monitoring of nearly any system on virtually any vessel. The Simrad NSE can operate as a Czone™ controller. Control your lights, turn on your bilge pump, monitor tank levels – all from your NSE navigation system. NSE and Czone™ – a partnership in Innovation.
  Find out more from www.bepmarine.com



RADAR

▲ Radar improves a mariner's situational awareness. Easy to operate Radar function allows for Navigation, Target Tracking and collision avoidance. Display both MARPA and AIS targets for the complete picture.

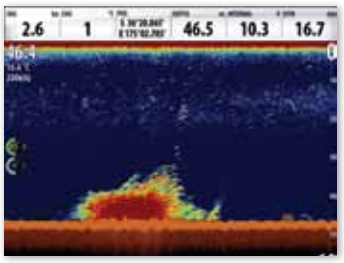


▲ True Motion Radar

RADAR

PRO BROADBAND RADAR™

- **Simrad HD Digital Radars** and the award-winning **Broadband Radar™** now support **True Motion Radar Display**. Moving vessels are instantly distinguished from fixed objects and land masses, eliminating guesswork in PPI interpretation.
- Broadband Radar near-range performance and usability is optimized with the addition of High-Speed Antenna Rotation; increased target update rates provide early detection and tracking of high-speed radar targets. Discover also the capability to show MARPA targets on your chart screen and added floating VRM's and EBL's for more effective radar piloting. Simrad NSE delivers "big-ship" radar features to your vessel.
- **Vessel Course Extension Line.** Vector showing predicted vessel position based on time or distance



ECHO

▲ NSE utilises high performance Broadband Sounder™ technology to penetrate deepwater, clearly define underwater structure and "whisper" into the water to find more fish.

▲ SideScan™ ▲ DownScan™ ▲ Trackback™

ECHO

PRO STRUCTURESCAN™

- StuctureScan™ is plug and play technology allowing quick and clean installation for up to three NSE displays per transducer. You've never seen bottom structure like it - moorings, wrecks and other structures, on or part of the bottom, will be reveled instantly. Search for missing people and/or other objects is significantly easier with Simrad StructureScan™.
- **SideScan**: Full-screen, top-down panoramic view of highly detailed bottom imaging on either side of the boat
- **DownScan Imaging™**: Adds a new dimension to echosounding. High Frequency imaging gives life-like representation of water structure
- **TrackBack™**: Scroll back simultaniously through sonar history and chartplotter trail from sonar or StructureScan™ display to easily mark waypoints
- **DownScan™ Overlay™**: Exclusive new technology overlays DownScan™ onto Broadband Sounder™ on one display that clearly separates fish targets from surrounding structure

Simrad BR24 Broadband Radar™

Simrad has introduced a revolutionary new radar system unlike anything else on the boating market. Utilising broadband Frequency Modulated Continuous Wave (FMCW), this breakthrough technology provides superior target detection and separation, ease of operation and a new level of navigational safety to a wide range of boats.

PRO BROADBAND RADAR™ KEY FEATURES

- **Crystal clear image:** Miss none of your immediate surroundings. Fantastic for tight manoeuvres in tight/crowded areas or in conditions of limited visibility. Unparalleled performance in heavy snow conditions.
- **InstantOn™:** Solid-state technology produces an immediate, accurate on-screen image.
- **Low power consumption:** Broadband radar requires very little power: ideal for all types and sizes of boat.
- **Extremely low emissions:** This safest of radars means it can be mounted anywhere. Broadband radar has lower emissions than a mobile phone.
- **Quick installation:** No reason to open the dome, no tune or zero mile adjustment, and best of all – no radar-licensed technician required.
- **Very low life cycle cost - no maintenance required**

BR24 Broadband Radar™

Part Number	Description
700-2007	BR24 Radar bundle for Simrad NSE series Includes Scanner, scanner cable 20 m (65.5 ft), RI10 interface box, Yellow ethernet cable - 1.8 m (6 ft)

ACHIEVE AMAZING TARGET DEFINITION WITH SIMRAD BR24 BROADBAND RADAR™

- Only possible at this range as broadband radar has no main pulse suppression that a conventional radar suffers from. Possible to see targets close together and yet they are clearly shown as separate targets.

Four posts to starboard with two yachts clearly visible behind

- At short ranges the Broadband Radar is showing up the individual yachts in their berths, ideal at night when visibility may be compromised. In this type of situation conventional radar would only show a merged target possibly obscured by the main pulse.

Vacant berths in a marina are easily identified

RANGE DISCRIMINATION PERFORMANCE

- Range discrimination is a measure of the radar's ability to distinguish closely spaced targets on the sample bearing. FMCW technology provides unsurpassed performance for your maximum safety and precise navigation. At 16nm and less the BR24 has from 1X to 5X more the range discrimination ability to see those smaller targets than conventional 2kW pulse radars. This greatly improves your situational awareness.

At 16nm and less the BR24 has from 1X to 5X more the range discrimination ability to see those smaller targets than conventional 2kW pulse radars.

HD Digital Radar 2kW / 4kW / 6kW / 10kW / 25kW

Simrad HD Digital Radar Systems use both Radomes and Open Array antennae, working with power levels from 2kW to 25kW via high capacity Ethernet. They ensure exceptional detection of small or distant targets using advanced Digital Signal Processing (DSP). Screen-clutter in any weather is virtually eliminated to display the full picture of your surroundings allowing a clear, accurate and easy-to-interpret image, using 10-bit digital radar video sampling and Sensitivity Time Control (STC). Adding a high speed heading input from an autopilot system or dedicated sensor allows the radar image and MARPA-targets to be accurately overlaid on the chart. Enhanced rotational mode enables you to interpret targets instantly. Simrad Professional's HD Digital radars automatically adjust colour gradients on longer ranges for better interpretation of targets. This is especially useful when looking into storm areas and weather fronts.
Automatic Harbour and Offshore modes provide optimised radar imaging for hands-off operation. The radar provides bearing and distance, speed and course, closest point of approach and time on selected targets. Easy to use Guard Zone areas can be shaped and defined by the user, to maintain a radar watch in specific zones. Qualified radar targets that enter the active zone will trigger an alert on the radar system.

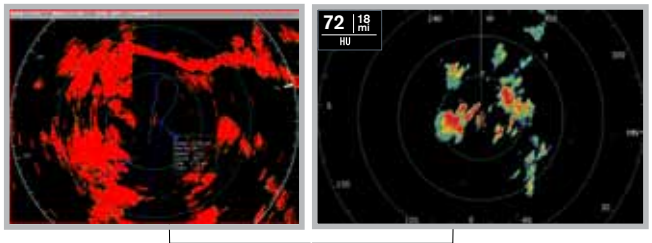
Simrad 6kW Array

Simrad 4kW Dome

PRO HD DIGITAL RADARS KEY FEATURES

- High Performance Scanners
- Networked Radar System
- Digital Signal Processing Technology
- Radar/Chart Overlay
- FIVE Scanner Options From: 2 kW/18" to 25 kW/7'
- Automatic Tune, Gain and Sea Clutter Adjustments
- Resolution 1280 x 1024 pixels
- Wide dynamic range receiver for improved sea clutter
- Modern remote keypad controller
- Digital, Analog, and multimedia inputs
- VGA output connector for second monitor
- Nav lines and trails with parallel index lines
- Optional tracking up to 50 AIS targets
- Optional Target Tracking (ATA) up to 10 user
- Selected targets - up to 5 automatic
- Optional Gyro Log interface

Part Number	Description
AA010028SIM	25 kW Radar scanner, 7 ft
AA010016	Navico 25kW radar processor
AA010027SIM	10 kW Radar scanner, 6 ft
AA010015	Navico 10kW radar processor
AA010026SIM	6 kW Radar scanner with 4 ft antenna and 20 m (66ft) cable
AA010014	Navico 6kW radar processor
AA010025SIM	4kW radome, 24 In, with 15 m (49 ft) cable
AA010013	Navico 4kW radar processor
AA010024SIM	2kW radome, 18 In, with 15 m (49 ft) cable
AA010012	Navico 2kW radar processor



- Targets can be interpreted instantly through chart information – such as navigation aids and coastlines. Heading allows Mini-ARPA operation on NSE with tracking capacity up to 10 different User-defined targets.
- Different colour palettes are provided to suit the user's taste as well as to improve viewing in different lighting conditions.

Simrad Automatic Identification Systems

Smaller boats can easily go undetected by radar systems on larger commercial vessels, because the radar's line-of-sight can be blocked by the superstructure of the ship or can also miss the boat due to the high placement of the radar antenna. This can easily exceed 30 meters over the sea level. The AIS is not line-of-sight and the range is typically about 20 nautical miles. This is one major reason why large commercial vessels are required to carry an AIS-transponder.
AIS focuses your awareness on all vessels in your vicinity and helps reduce the risk of collision by exchanging safety data between them, such as: Vessel Name, Size & Call sign - Maritime Mobile Service Identity number (MMSI), Vessel Type, Time to closest point of approach, Course, Speed and Heading.
Simrad is currently the only major brand that offers NMEA2000/SimNet compatible Class-B Transmit and Receive AIS transponder systems, both as an integrated standalone product with colour display (AI50) and as a black box solution (NAIS-300) designed for use with any AIS-compatible multi-function display product.

AI50

PRO AI50 KEY FEATURES

- Class-B AIS transponder with integrated GPS receiver and 4" TFT colour display
- Backlit display and keypad
- Built-in map with range rings and 12 zoom ranges from 0.01 to 32 nm
- Cursor ID mode allows easy readout of target vessel data
- Target track log mode data stored and played back via SD-Card
- Call Target. Simply place the cursor over the target you wish to contact and press the DSC button*

  * Note: This feature requires that the AI50 is connected to a Simrad RS80 series VHF radio.
- Favourite list with "Fleet tracking" . Audible/Visual alarms for Collision, Lost vessel track, Favourite buddy alarm and Guard Zone
- NMEA2000/SimNet/RS232 Interface

▶ AI50

Part Number	Description
000-0135-00	AI50 AIS Class B transponder
000-0135-03	NAIS-300N Class B AIS with SimNet interface
000-0135-04	NAIS-300L Class-B AIS with NMEA 2000® interface

NAIS-300N/L

The NAIS-300 is a Class-B AIS black box transponder system with an integrated GPS receiver. It comes in two versions; the L-version with the NMEA2000 Interface and the N-version with the SimNet Interface. A CD-ROM and a RS232 PC cable are included for entering the MMSI number and other vessel data.

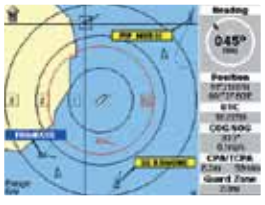
PRO NAIS-300 KEY FEATURES

- Black Box Class-B AIS Transponder System with integrated GPS receiver
- NMEA-2000/SimNet/NMEA-0183 (high Speed) Interface
- AIS Transmit & Receive function (AIS Class-B)

▶ NAIS-300

▲ Move the cursor over a target to identify the vessel

▲ Set a guard zone for a target



▲ Range rings make it easy to judge distance to any target

▲ See when your colleagues / sister ships in the area and get notified when they enter your AIS range

AIS MX535A

MX535A / MX512 AIS System: Type Approved AIS Transponder System, meets the latest IMO requirement ITU-RU.1371-3 standard.

MX Marine has developed a complete solution to D/GPS and AIS System. With only one combined Control and Display unit, you can access all related information and still command full control of all D/GPS, AIS, and optional D/GPS Compass functions. The system connects directly to the ship's navigation sensors as well as ECDIS, ARPA radar and other shipboard information systems.

Adding AIS to navigation for spontaneous 'ship to ship' or 'ship to shore' recognition greatly enhances safety at sea and provides mariners with new levels of real-time information. Designed with the deep sea commercial mariner in mind, we have created multiple configurations to suit the size and complexity of any vessel.

The MX535A transponder, is a fully IMO-compliant STDMA unit remotely controlled by MX512 Control and Display unit. Transponder system set-ups and controls is configured in the MX512. It can also gather the ship's sensor data and organizes the information for transmission via AIS. The ship's ECDIS, ARPA and Pilot's PC all have access to both the D/GPS and the AIS information via the high-speed serial ports of the MX535/ MX512.

Password protected menus allow you to safely and simply enter all Static and Voyage related AIS information. AIS Situation Displays give you immediate and continuous graphic and/or text information about AIS-equipped ships and shore stations as they come into radio range.

PRO MX535A KEY FEATURES

- Complies with the latest IMO standard ITU-RM.1371-3
- Identify other AIS enabled ships by its' correlated UAIS identification
- Contact other ships using the Call Signs presented by the AIS Screen
- Receive an instant overview of traffic situations and the maneuvers of other ship
- Able to get detailed information on AIS enabled ships in radar blind zones
- Supplied Junction Box allows easy interconnection between MX535A, MX512 Display and other interfaces
- Built-in GPS is RAIM enabled

▶ **MX535A**

Part Number	Description
000-10037-001	MX535A
512-100-1001	MX512 junction box
512-000-0000	MX512 CDU

▶ **MX512 AIS/MKD and Navigation Control Display**

▶ **MX512 Junction Box**

Navigation System MX500

IMO TYPE-APPROVED COMPACT NAVIGATOR

The MX500 DGPS Navigation Control and Display Unit meet the latest IMO Specification
It is a type approved marine navigator with the MX521A, MX421 or MX525A DGPS Antenna Sensors, including RAIM (Receiver Autonomous Integrity Monitoring). MX500 can also be used with MX575A DGPS Compass. MX575A is typed approved for primary Navigation and secondary heading. Also, the MX500 can be used as a Single Station or in Dual-Control mode with up to four slaves via high-speed LAN interface.

PRO MX500 KEY FEATURES

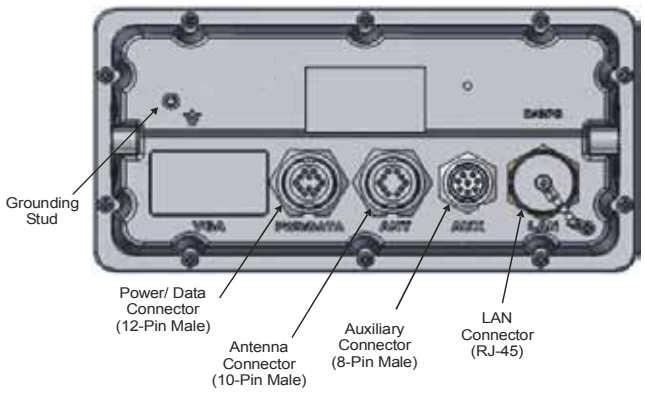
- Network to Integrated Bridge Systems (IBS) or to other conventional equipment via LAN or NMEA serial ports.
- Save & restore Waypoints, Routes, Plot and Configuration settings via USB or built-in Flash RAM.
- Convenient software updates via USB port.
- Multiple options for navigation data management via LAN, USB, or NMEA serial ports.
- User-friendly man-machine interface based on its renowned predecessors.
- Integrity monitoring of dual DGPS systems for automated redundancy and reliability (BRIM).
- User selectable NMEA0183 messages V1.5 to V2.3 for backward compatibility with the widest range of devices.
- Multi-port interface that can be connected to ECDIS, ARPA, Gyro and other navigation information systems.

▶ MX500 D/GPS Navigation Control Display

Part Number	Description
500-01-00	MX500 CDU with MX521A GPS Antenna (add cable)
500-03-00	MX500 CDU with MX521A DGPS Antenna (add cable)
MX-500	MX-500 CDU
500-100-1002	MX500/MX510 Junction Box

OPTIONAL ACCESSORIES

▶ MX500 Junction Box



▶ MX500 Connector Configuration

Navigation System MX510 and MX512

THE LATEST IN IMO COMPLIANT NAVIGATION SYSTEMS

The MX510 and MX512 models are designed to be used as IMO compliant navigation systems, in conjunction with MX DGPS smart antennas and DGPS compasses, on board workboats, ferries, fishing boats and other commercial vessels.
The MX510 and MX512 are easy to use via the user-friendly MMI (Man Machine Interface) already renowned from its predecessors; these versatile navigation systems offer extraordinary capabilities, with its multi-port interface that can be connected to ECDIS, ARPA, Gyro and other navigation information systems. It can be configured as a single display or multi-unit redundant displays.
The MX510 and MX512 with the MX521A smart antenna are type-approved marine navigator. Backward compatible with MX421B-10 DGPS antenna. They are also Compatible with MX575 DGPS Compass.

MX510

The MX510 with the MX521A DGPS is a type-approved marine navigator. Backward compatible with MX421B-10 sub-meter DGPS antenna. It is also compatible with MX575 D/GPS Compass. Features two independant RS-422 NMEA ports.

Part Number	Description
510-01-00	MX510 CDU with MX521A GPS Antenna (add cable)
510-03-00	MX510 CDU with MX521A DGPS Antenna (add cable)
510-000-0000	MX510 CDU
500-100-1002	MX500/MX510 Junction Box

▶ MX510 Navigation Control Display

MX512

The MX512 features eight independent RS-422 and one RS-232 serial ports for two-way communication with any NMEA 0183 compatible device. Optional software updates are made through the convenient USB ports.

Part Number	Description
512-01-JB	MX512 CDU with MX521A GPS Antenna and JB (add cable)
512-03-JB	MX512 CDU with MX521A DGPS Antenna and JB (add cable)
512-000-0000	MX512 CDU (also order JB P/N 512-100-1001)
512-100-1001	MX512 Junction Box

▶ MX512 Navigation Control Display

PRO MX510 / MX512 KEY FEATURES

- IMO Type-Approved with RAIM enabled
- Choice to save and restore Waypoints, Routes and Configuration settings .
- Multiple navigation data management options using LAN, USB or NMEA serial ports
- High speed LAN interface for Master/Slave operation (with Integrity Monitoring) and up to 4 slave displays
- Convenient navigation equipment interface using LAN or NMEA ports
- MX512 only: 9 independent serial data ports and one VGA port

MX512 OPTIONAL ACCESSORIES

▶ MX512 Junction Box

MX Smart Antennas

Navigation authorities around the world have installed DGPS radiobeacon networks that broadcast free RTCM correction information. With the use of its' built-in beacon demodulator, the MX smart antennas use these real-time corrections to deliver accurate, reliable positioning when in range of a beacon transmitter. The antennas can be controlled by the operator to accept RTCM data from external sources using the MX Control and Display Unit (MX CDU).

Receiver Autonomous Integrity Monitoring (RAIM) is a safety feature in the MX smart antennas which continuously verify the integrity of the GPS system to ascertain its' accuracy and reliability. When position error exceeds a pre-set limit, the MX CDU alerts the operator to take precautionary measures. RAIM is one of the latest requirements under IMO MSC 112 (73) regulation. This RAIM feature can be accessed by the operator using the MX CDU.

The MX smart antennas can interface directly to the MX CDU or to other NMEA0183 compatible devices.

PRO MX SMART ANTENNAS FEATURES

- IMO type approved smart antennas
- RAIM enabled
- Compatible with all MX CDUs
- MX521A/MX525A WAAS compatible

▶ **MX Control and Display Unit**

MX525A DGPS SENSOR WITH MXB5

Precision DGPS positioning solution in a black box unit. Featuring built-in RAIM and Space Based Augmentation Systems (SBAS) and compliant to the latest IMO standards GPS/DGPS Black-box Receiver. The MX525A delivers position accuracy better than 1 meter in DGPS mode when using RTCM correction data. It also provides better than 5 meters accuracy in standard GPS mode. It is backward compatible with existing MX420 systems to make them compliant with the latest IMO requirements.

Space Based Augmentation Systems (SBAS) like the European Geostationary Navigation Overlay System (EGNOS), the US Wide Area Augmentation Service (WAAS) and the Japanese MTSAT Satellite Based Augmentation System (MSAS) are being developed throughout the world. The MX525A can be controlled to use these systems to provide accurate positions in areas not covered by DGPS beacon stations, but covered by SBAS.

▶ **MX525A DGPS Sensor**

▶ **MXB5 DGPS Antenna**

PRO MX525A KEY FEATURES

- IMO MSC.112(73) compliant*
- RAIM (Receiver Autonomous Integrity Monitoring) enabled
- Meets Smart-Beacon specifications
- Suitable for installations with long cable requirements
- Compatible with existing MGL-3/4 combined antenna and coaxial cable
- Connects directly to MX Control and Display Unit
- Better than 1 meter DGPS Position accuracy
- Better than 5 meter GPS Position accuracy
- Integrated DGPS system including beacon and SBAS (WAAS/EGNOS)
- NMEA0183 ver. 3.0 interface

*MX CDU is required to comply as an IMO type approved system

Part Number	Description
727061	MX525A DGPS Smart Antenna Sensor
721755	MXB5 DGPS Antenna
9525-200-85000	MX525A DGPS Smart Sensor with MXB5 Antenna

MX421B-10 SMART ANTENNA

High accuracy DGPS Smart Antenna.This antenna has sub-meter accuracy with Beacon DGPS corrections. MX421B-10 is also offered with 5 Hz position output and is used in race boats because of high accuracy. The High Accuracy MX421B-10 delivers position accuracy better than 1 meter in DGPS mode when using RTCM correction data. It also provides better than 3 meters accuracy in standard GPS mode. The MX421B-10 is available in 1 Hz or 5 Hz position update.

PRO MX421B-10 KEY FEATURES

- Better than 1 meter (RMS) DGPS Position accuracy and better than 3 meter (RMS) GPS Position accuracy
- NMEA0183 ver. 3.0 interface
- IMO type approved*, including RAIM (Receiver Autonomous Integrity Monitoring)
- Designed for easy upgrade of existing MX420 installations to latest IMO Standards.

*MX CDU is required to comply as an IMO type approved system

MX421B-10 Smart Antenna

Part Number	Description
9525-200-80110	MX421B-10 DGPS Smart Antenna 1 Hz
9525-200-78610	MX421B-10 DGPS Smart Antenna 5 Hz

MX521A SMART ANTENNA

Precision D/GPS positioning solution in a Smart Antenna unit.Featuring built-in RAIM and Space Based Augmentation Systems (SBAS) and compliant to the latest IMO standards.

DGPS Smart Antenna Receiver.The MX521A delivers position accuracy better than 1 meter in DGPS mode when using RTCM correction data. It also provides better than 5 meters accuracy in standard GPS mode. It is backward compatible with existing MX420 systems to make them compliant with the latest IMO requirements.

Space-Based Augmentation Systems (SBAS) like the European Geostationary Navigation Overlay System (EGNOS), the US Wide Area Augmentation Service (WAAS) and the Japanese MTSAT Satellite-based Augmentation System (MSAS) are being developed throughout the world. The MX521A can be controlled to use these systems to provide accurate positions in areas not covered by DGPS beacon stations.

PRO MX521A KEY FEATURES

- IMO MSC.112(73) compliant*
- RAIM (Receiver Autonomous Integrity Monitoring) enabled
- Meets Smart-Beacon specifications
- Designed for easy upgrade of existing MX420 installations to latest IMO standards
- Connects directly to MX Control and Display Unit
- Better than 1 meter DGPS Position accuracy
- Better than 5 meter GPS Position accuracy
- Built-in DGPS sources include beacon and SBAS (WAAS, EGNOS, MTSAT)
- NMEA0183 ver. 3.0 interface

*MX CDU is required to comply as an IMO type approved system

MX521A Smart Antenna

Part Number	Description
727050	MX521A GPS Smart Antenna
727051	MX521A DGPS Smart Antenna

MX575A DGPS Compass

The MX575A D/GPS compass is designed to provide the Simrad Professional Autopilots, MX5XX Series navigation and AIS systems with reliable heading, ROT (Rate of Turn) and position information. The MX575A delivers a heading accuracy of better than 0.5° at update rates of up to 10 Hz. It also provides sub-meter DGPS positioning accuracy at rates of up to 10 Hz when using RTCM correction data supplied from internal beacon demodulator.

▶ MX575A DGPS Compass

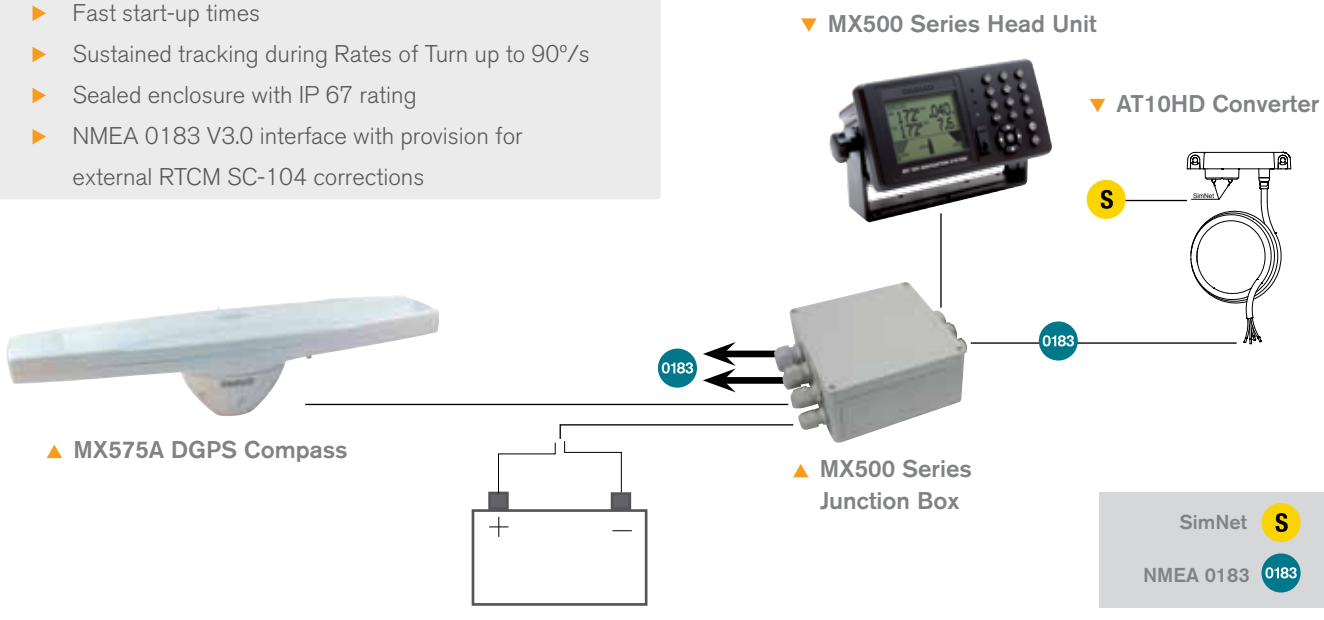
To augment the GPS-derived heading, the MX575A includes other supplemental devices. The combination of inclinometer and magnetic sensing devices aid the rate at which a heading solution is computed on startup and also speeds up reacquisition. A rate gyro provides a secondary source of heading data in times when the GPS heading is not available due to temporary obstructions. These sensors improve performance and increase dependability of the MX575A. The MX575A features two independent RS-232 serial ports and one RS-422 port. The output of the RS-422 port mirrors that of one RS-232 port. It also features COAST™ technology that allows it to use old correction data for up to 40 minutes without seriously affecting positioning performance. This feature offers peace of mind and allows you to focus on more important issues than reliability of a differential signal.

MX575A KEY FEATURES

- Type-Approved as a Transmitting Heading Device (THD) and a Primary Positioning Device
- Compatible with MX5XX family of CDUs
- Stand-alone automatic operation
- Heading accuracy of 0.5°
- Position and Heading updates up to 10 Hz
- Integrated DGPS sources including WAAS, EGNOS, and Beacon
- Sub-meter DGPS accuracy
- Fast start-up times
- Sustained tracking during Rates of Turn up to 90°/s
- Sealed enclosure with IP 67 rating
- NMEA 0183 V3.0 interface with provision for external RTCM SC-104 corrections

Part Number	Description
9525-200-80900	MX575A DGPS Compass with 15M Cable

MX575A BASIC SYSTEM



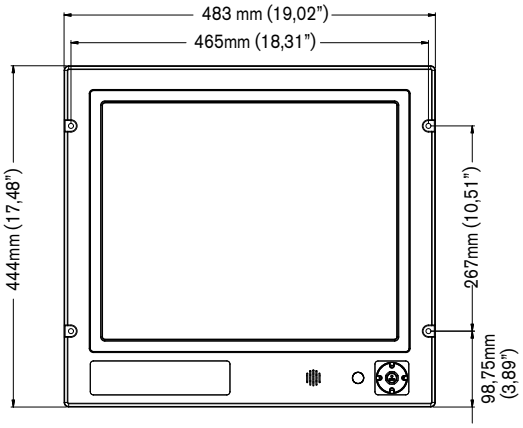
Technical Specifications

ECDIS AND PLECDIS™ AND ECS SYSTEMS

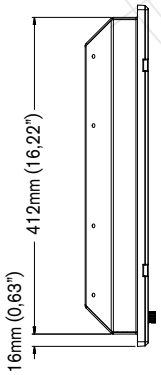
LCD MONITORS (19" DISPLAY)

The images of the LCD display are the property of Hatteland Display AS. These images and any authorized reproduction thereof, must not be used in any way against the interest of Hatteland Display AS. Any authorized reproduction, in whole or in part, must include this legend.

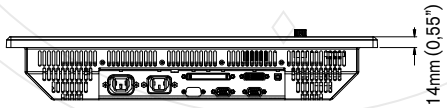
FRONT VIEW



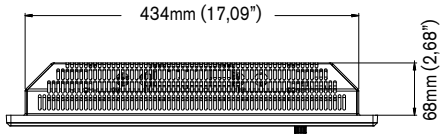
SIDE VIEW



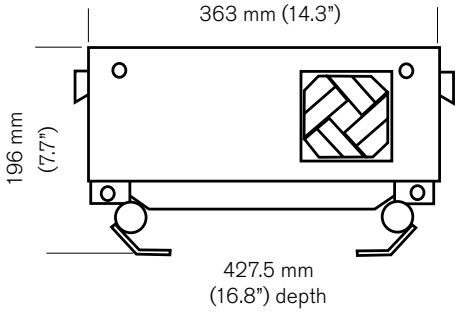
BOTTOM VIEW



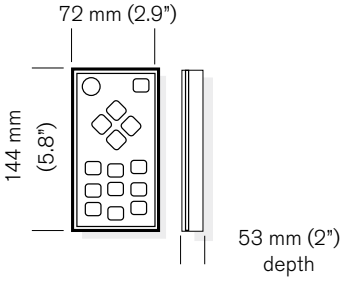
TOP VIEW



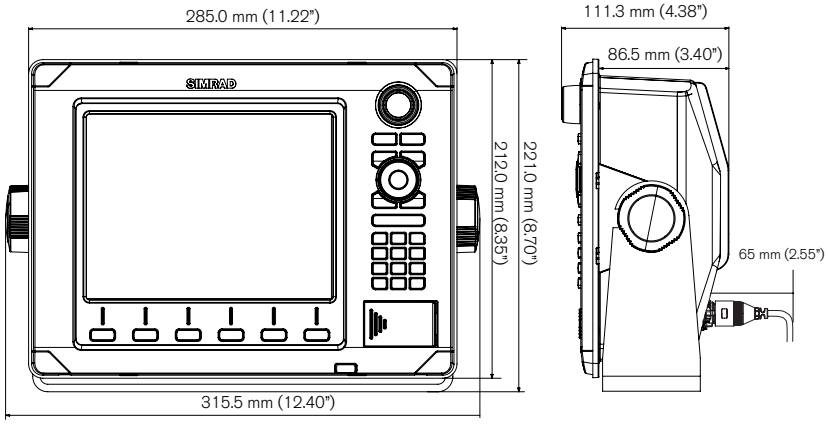
MC50 MARINE COMPUTER



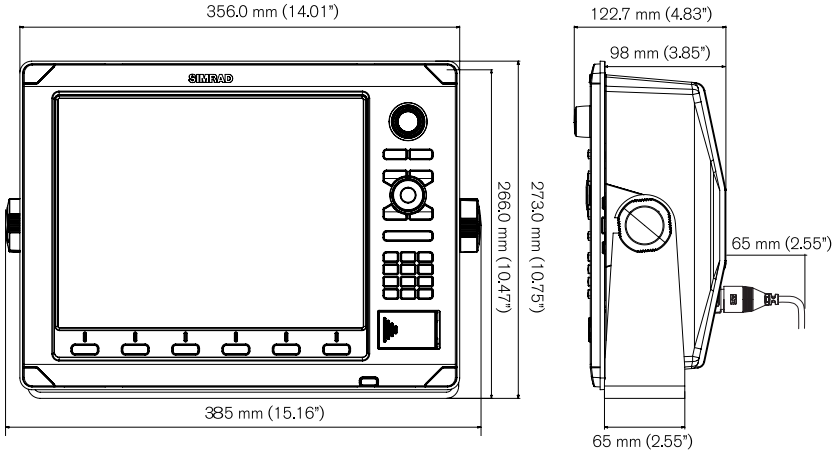
COP10 REMOTE CONTROL



NSE8



NSE12



NSE8 AND NSE12 SPECIFICATIONS

	NSE8	NSE12
DISPLAY		
Type	8" Colour TFT LCD	12.1" Colour TFT LCD
Screen Size	8 inch diagonal viewing area	12 inch diagonal viewing area
Screen Resolution	800 x 600	1024 x 768
Screen Brightness	1500 Nits	1500 Nits
Contrast Ratio	850:1	600:1
Viewing Angle	60 Deg above and below normal axis with >75% nominal brightness > 100:1 Contrast Ratio 60 Deg Side to Side from normal axis with : > 75% Nominal brightness. 100:1 contrast ratio	
Languages (31)	English (UK), English (US), German, French, Spanish, Italian, Portuguese, Croatian, Finnish, Icelandic, Dutch, Norwegian, Polish, Swedish, Slovenian, Russian, Ukrainian, Bulgarian	
Unit Dimensions without bracket/knobs (H x W x D) mm	212.0 x 285.0 x 111.3 mm	266.0 x 356.0 x 122.7 mm
Unit Dimensions without bracket/knobs (H x W x D) in	8.35 x 11.22 x 4.38 in	10.47 x 14.01 x 4.83 in
Pack Dimensions (H x W x L) mm	220 x 300 x 390 mm	260 x 340 x 435 mm
Pack Dimensions (H x W x L) Inches	8.66 x 11.81 x 15.35 inches	10.24 x 13.39 x 17.13 in
Pack Weight	6.3 kg/12.6 lbs	8.5 kg/17 lbs
Case Pack Weight (2 Per Case)	12.7 kg/ 25.4 lbs	17.1 kg/ 34 lbs
MECHANICAL		
Housing Construction	Die Cast Aluminium Rear housing, Snap-fit front bezel	
Heat Sinking	Direct heat transfer from processor to housing	
Screen	Direct Bonded	
Processor/ RAM/ Hard Drive	1.6 GHz / 512 MB / 80 GB	
Interface	Direct Access Keys (DAK's), Alphanumeric Keypad, Rotary knob with Push-to-Enter	
PLOTTER CHARACTERISTICS		
Display Modes	Head-up, Course-up*, North-up*, Relative Motion (*Heading input required)	
Latitude Limit	83° North, 85° South	
Alarms	Position, Off-Course, Waypoint Radius, Arrival, Anchor, Anchor Depth, Shallow, Deep, Water Temp Rate, Low Boat Speed, True Wind Shift, True Wind High, True Wind Low, Guard Zone 1 & 2, Voltage Hi/Lo, Missing Data: Depth/Rudder/Wind/Heading/Weather, Weather: Lightning, Severe Weather, Storm, Weather Watchbox, Vessels: Dangerous, AIS Lost, Message, MARPA Lost, MARPA Unavailable, Autopilot Alarms	
Cartography	Embedded: Navico Insight HD US/Navionics Platinum Rest of World; Navionics Platinum Plus via SD Card	

	NSE8	NSE12
RADAR CHARACTERISTICS		
Radar Compatibility	Broadband: Simrad BR24; Simrad HD Digital Series 2kW to 25kW	
Display Modes	Head-up, Course-up*, North-up*, Relative Motion (*Heading input required)	
Echo Trail	Intervals: 15 sec, 30 sec, 1 min, 3 min, Continuous. Clear Trails	
VRM/EBL's	2: User Configurable	
INTERFACE		
LAN	3 Ports 10/100 Base	
Interface (NMEA 0183)	Input: GLL, GGA, RMC, RMB, GSA, GSV, APB, BWC, DBT, DPT, MTW, VLW, VHW, HDG Output: GGA, GLL, GSA, GSV, VTG, ZDA, AAM, APB, BOD, BWC, BWR, RMC, RMB, XTE, DBT, DPT,MTW, VLW, VHW, HDG, MWV,TLL, TTM	
Interface (NMEA 2000)	Input: 59904, 60928, 65285, 65292, 65293, 65303, 65305, 65323, 65325, 65480, 126208, 126992, 126996, 127237, 127237, 127245, 127250, 127251, 127257, 127258, 127488, 127489, 127493, 127505, 127508, 128259, 128267, 128275, 129025, 129026, 129029, 129033, 129038, 129039, 129040, 129285, 129539, 129540, 129794, 129801, 129802, 130306, 130310, 130310, 130311, 130312, 130313, 130314, 130576, 130577, 130817, 130820, 130821, 130831, 130832, 130834, 130835, 130838, 130839, 130840, 130842, 130844, 130845, 130850, 130851, 130860 Output: 59904, 60928, 61184, 65292, 65287, 65289, 65290, 65293, 65303, 65305, 65323, 126208, 126996, 127237, 128259, 128267, 129285, 130577, 130818, 130819, 130831, 130835, 130836, 130837, 130839, 130840, 130844, 130845, 130850, 130851	
USB Port	(2) - 1 Front, 1 Rear	
Video Output	DVI-I x (1)	
Video Input	Composite Video x (2) (multiplexed)	
Video Compatibility	NTSC type N and 4.4.3, PAL type B, D, G, H, I, M, N User selectable	
SD Card Slot	Single	
ENVIRONMENT		
Temperature	-15 Deg C to +55 Deg C (+5 Deg F to +131 Deg F)	
Waterproofing	IPx6	
POWER		
Power supply	12.0 VDC-24.0 VDC (9.0 - 32.0 VDC Min-Max)	
Current Draw (in Watts) at	21.6W or 1.8A @ 12.0 VDC or 21.6W or 0.9A @ 24VDC	
12/24VDC Display only	33.6W or 2.8A @ 12.0 VDC or 33.6W or 1.4A @ 24VDC	
Certificates of Conformity	CE(EN60945:2002)/CTick	

BR24 SPECIFICATIONS

GENERAL

Compliance	FCC/IC/R&TTE/AUS Type Certification pending FCC ID: RAYBR24 IC ID: 4697A-BR24 Human Exposure General Public Safety Limit – touch dome anywhere.
Environmental	IEC60945 4th edition 2002-2008 Operating Temperature: -25i to +55iC Relative humidity: +35iC, 95% RH Waterproof: IPx6
Relative wind velocity	51 m/sec (Max:100 Knots)
Power consumption	Operating: 17W (Typ.) @ 13.8Vdc Standby: 1.6W (Typ.) @ 13.8Vdc ~ 110ma
DC input (at end of radar cable)	9V to 31.2Vdc (12/24 Volt systems). Reverse polarity protection
Transmitter Source (pre-heating time)	No magnetron – Instant On™
Outside dimensions	Height 280mm x Diameter 488mm
Weight (no cable)	7.4 kg

RADAR AND ANTENNA PARAMETERS

Radar Ranges	1/32 to 24nm with 15 range settings (nm/sm/km)
Rotation	24 rpm +/- 10% 36 rpm at less than 2nm range
Transmitter frequency	X-band - 9.3 to 9.4Ghz
Transmitter source (warm-up time)	No Magnetron – all solid state. Instant On™
Plane of polarization	Horizontal Polarization

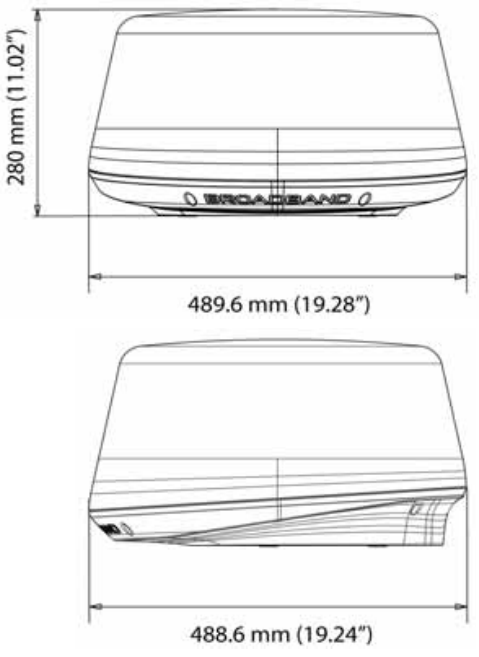
RADAR AND ANTENNA PARAMETERS CONTD.

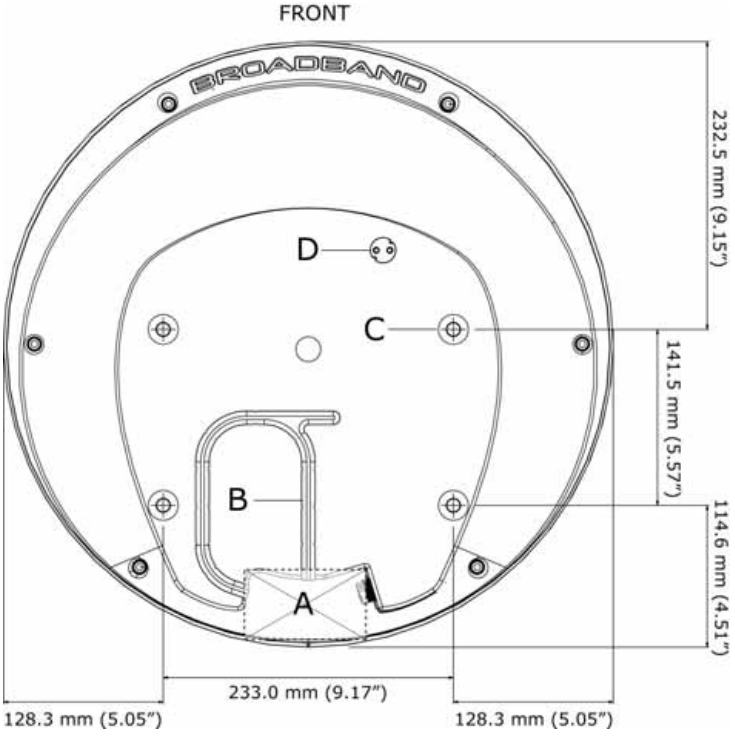
Transmitter peak power output	100mW nominal
Main Bang Dead Zone & Tuning	None – not a pulse radar
Sea and Rain Clutter	5X less than a pulse radar
Sweep Repetition Frequency	200Hz
Sweep Time	1ms
Sweep Bandwidth	65MHz max
Horizontal Beam width (Tx and Rx antenna)	5.2i+/-10% (-3dB width)
Vertical Beam width (Tx and Rx antenna)	30i+/-20% (-3dB width)
Side lobe level (Tx and Rx antenna)	Below -18dB (within ±10i);Below -24dB (outside ±10i)
Noise figure	Less than 6dB

COMS/CABLING/MOUNTING

Com Protocol	High Speed Ethernet and Serial
Heading	NMEA2000/Simnet (with RI-10 interface box)
Inter Connecting cable length	10m standard with RJ45 thin custom connector – Display model dependent
Maximum Inter Connecting cable length	30m
Bolts (4)	M8x30 - 304 stainless steel
Footprint	W233mm (port/starboard) x L141.5mm (matches Garmin GMR18HD/Raymarine RD218 footprint)

BR24





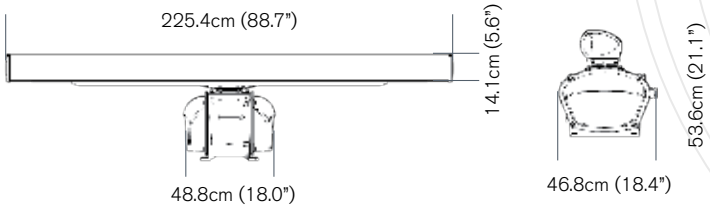
HD DIGITAL RADARS SPECIFICATIONS

	25 KW 7' / 2.2T5M	10 KW 6' /1.88M	6 KW 4' / 1.28M	4 KW 24" / 620 MM	2 KW 18" / 450 MM
Weight with antenna - no cable	54kg /119lbs	35kg /77lbs	29kg / 64lbs	10 kg / 22 lbs	4.2kg / 9lbs 6 kg / 13.2 lbs with cable
Cable Length	20 meters standard 30 meters optional	20 meters standard 30 meters optional	20 meters only	15 meter standard 20 meters optional	15 meter standard 20 meters optional
Dimensions	L2254 x W458 x H536 mm L88.7 x W18.0 x H21.1"	L1880 x W344 x H448 mm L74.0 x W13.5 x H17.6"	L1285 x W344 x H448 mm L50.6 x W13.5 x H17.6"	620 diameter x H280 mm 24.4 diameter x H11.0"	450 diameter x H227 mm 17.7 diameter x H8.9"
Max. Range Scale (nm)	96 nm	72 nm	64 nm	48 nm	24 nm
Horizontal beam width	1.0°	1.2°	1.8°	4.0°	5.2°
Vertical beam width	20°	20°	20°	25°	30°
Noise Figure (average)	6 dB	6 dB	6 dB	6 dB	7 dB
DC Voltage	21.6 V - 31.2 V	21.6 V - 41.6 V	10.8 V - 42 V	10.8 V - 42 V	10.8 V - 15.6 V
Power Consumption	180 W (Max)	250 W (Max)	120 W (Max)	30 W	25 W
Rotation Speed	24 RPM	27 RPM	27 RPM	27 RPM	27 RPM
Wind Speed (max)	100 knots	100 knots	70 knots	70 knots	70 knots
Pulse Length / PRF	0.07µs/2250 Hz 0.2 µs/2250 Hz 0.4 µs/1400 Hz 0.8 µs/750 Hz 1.0 µs/650 Hz 1.2 µs/510 Hz	0.08 µs/2250 Hz 0.25 µs/1700 Hz 0.5 µs/1200 Hz 1.0 µs/650 Hz	0.08 µs/2250 Hz 0.25 µs/1700 Hz 0.5 µs/1200 Hz 1.0 µs/650 Hz	0.08 µs/2250 Hz 0.25 µs/1700 Hz 0.5 µs/1200 Hz 1.0 µs/650 Hz	0.08 µs/2250 Hz 0.3 µs/1200 Hz 0.8 µs/600 Hz
Sidelobe Levels (less than +/-10° from main lobe)	-26dB max	-26dB max	-23dB max	-21dB max	-21dB max
Receiver Type and Bandwidth	LOG 20Mhz - Short 6Mhz - Med 3Mhz - Long	LOG 20Mhz - Short 6Mhz - Med 3Mhz - Long	LOG 20Mhz - Short 6Mhz - Med 3Mhz - Long	LOG 20Mhz - Short 6Mhz - Med 3Mhz - Long	LINEAR 10Mhz - Short 3Mhz – Med, Long
Processor Weight	0.9kg /1.9lb	0.9kg /1.9lb	0.9kg /1.9lb	0.9kg /1.9lb	0.9kg /1.9lb
Processor Dimensions	L197 x W141 x H57mm L7.77 x W5.55 x H2.24"	L197 x W141 x H57mm L7.77 x W5.55 x H2.24"	L197 x W141 x H57mm L7.77 x W5.55 x H2.24"	L197 x W141 x H57mm L7.77 x W5.55 x H2.24"	L197 x W141 x H57mm L7.77 x W5.55 x H2.24"

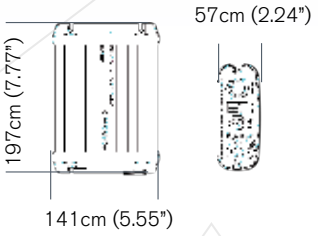
* The 25 kW radar scanner uses less power than the 10 kW because the 25 kW uses a more efficient motor that operates over a narrower voltage range. For 2kw/4kw/6kw order a kit; for 10kw/25kw order a radar and processor unit separately. 2kw: DX42S-1 radar kit; 4kw: DX64S-1 radar kit; 6kw: TX06S-1 radar kit.T

HD DIGITAL RADARS SPECIFICATIONS

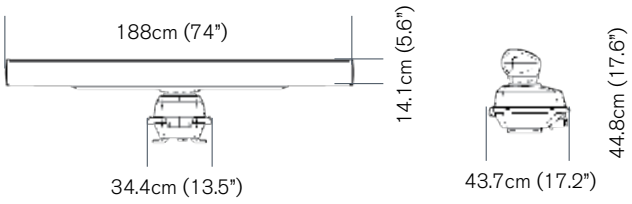
25KW SCANNER



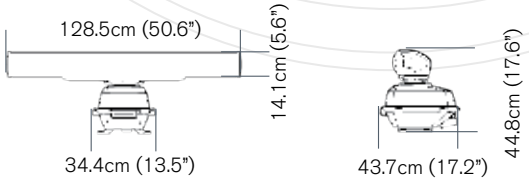
RADAR PROCESSOR



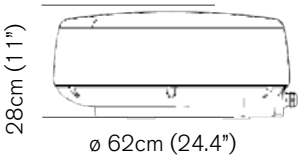
10KW SCANNER



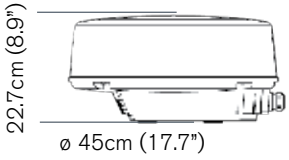
6KW SCANNER



4KW SCANNER



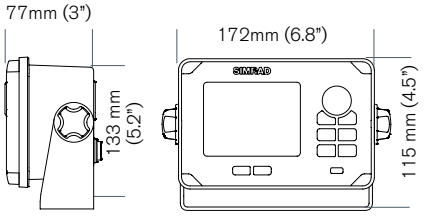
2KW SCANNER



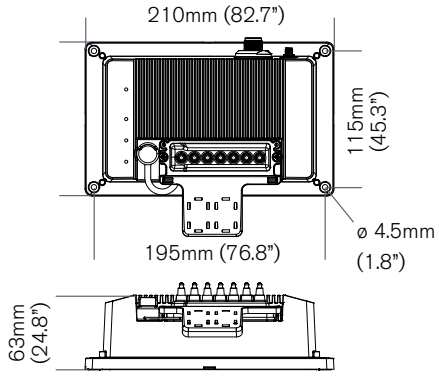
AI50 AND NAIS-300 SPECIFICATIONS

	AI50	NAIS-300
Power supply	10.8V to 15.6V	10.8V to 15.6V
Power consumption	<1A	< 0.5A
Receiver type	Dual TDMA (shared DSC)	Dual TDMA (shared DSC)
Receiver sensitivity	<-107dBm for 20% PER	<-107dBm for 20% PER
Transmit power	2 W	2 W
Type approval	IEC62287-1	IEC62287-1
AIS Class	Class B for use on non-SOLAS craft	Class B for use on non-SOLAS craft
GPS	Integral 16 channel receiver	Integral 16 channel receiver
Dimensions with bracket	20 x133x 77mm / 7.9x 5.2x3"	n/a
Dimensions without bracket	172x 115x 77mm / 6.8 x4.5x 3"	210x167x735mm / 8.27x6.6x2.9"
Weight	1kg	0.65kg
EMC	IEC60945	IEC60945
Temperature range	-15°C to +55°C	-15°C to +55°C
Waterproof	IP67	IP67
Backlighting	Keypad LED (red or white)	n/a
Display type	VGA TFT 102mm (4in)	n/a
Connectors	VHF Antenna PL259 / GPS Antenna SMB	
Interfaces	NMEA0183 **Out:** 38kbaud VDM, VDO, RMC, ARL **In:** 38kbaud for configuration and testing only SimNet/NMEA2000 Network load 1	

AI50



NAIS-300



MX535A SPECIFICATIONS

VHF

Frequency Range	156 MHz - 162 MHz
Channel Spacing	12.5 or 25 kHz
Number of RF channels	3 Recieve / 1 Transmit
Number of AIS Channels	2 Recieve
Number of DSC Channels	1 Recieve

VHF TRANSMITTER

Output Power	2 Watt (low) or 12.5 Watt (high)
Rx to Tx Switching Time	< 1 ms
Transmit Release Time	< 1 ms
Automatic Shutdown	1 sec.
Channel Switching Time	< 25 ms
Attack Time	< 1 ms

VHF RECEIVER

Max. Usable Sensitivity	< -110 dBm
Co-Chan Rejection	> -3 dB (25 kHz) > -12 dBm (12.5 kHz)
Adjacent Channel Selectivity	> 70 dB (25 kHz) > 60 dB (12.5 kHz)
Inter-modulation Rejection	> 65 dB
Spurious Response Rejection:	> 70 dB
Blocking	> 84 dB

VHF MODEM

Bit Rate GMSK	9600 bps
RF Baud Rate (DSC)	1200 bps
Modulation	GMSK/fFSK

BUILT-IN GPS

Reciever Type	12 Channel, (L1)
Tracking Capability	12 Satellites (sim.)
Accuracy (Horizontal)	< 10 m / 2 drms
Accuracy (Vertical)	< 15 m / 2 drms
DGPS Accuracy	< 5 m / 2 dms*

POWER SUPPLY

Supply Voltage	24 VDC (+/- 10%) (galvanic isolated)
Input Current	min. 7 Amp. (24V)

INTERFACES

Number of Data Ports	3 input / 4 I-O/1 Out
IEC 61162-1/2	(RS422 / NMEA 0183)
ITU-R M.823-2	(RS422 / RTCM SC104)

BIT RATES

CH1, 2 & 3	4800 bps/38400 bps
CH4 (ECDIS)	38400 bps
CH5 (Pilot Port)	38400 bps
CH8 (Long Range)	38400 bps
CH9 (diff. correction)	9600 bps
CH10 (Alarm circuit)	Dry relay contact

OPTIMAL INTERFACES

Number of data ports RS232	up to 5
Bit Rate	up to 115 000 bps
Simplex/Duplex	Duplex
Number of Data Ports IEC	1 x 61162-3 CAN (RS485)
Bit Rate	Up to 1 Mbps

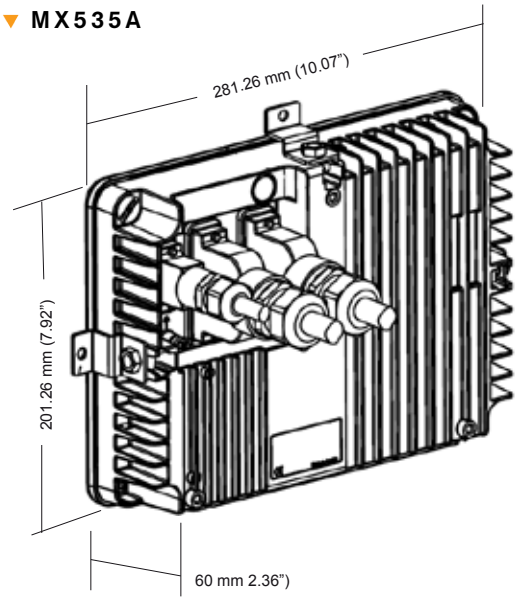
PHYSICAL

Size	(h): 201.26 mm/7.92" (d): 60 mm/2.36" (w): 281.26 mm/10.07"
Operating Temp	-15°C to 55°C (5°F to 131°F)
Connectors	50 Pin D-Sub (Male) N-Type (Female) VHF TNC (Female) GPS

SPECIFIED STANDARDS

MO MSC.74(69) Annex 3
ITU-R M.1371-3
IALA Tech. Clar. of ITU-R M.1371-1 (Ed. 1.3)
IEC 61993-2 (2002)
IEC 61162-1 (2000) - NMEA 0183-3
IEC 61162-2 (1998) - NMEA 0183-3
IEC 61162-3 --------- NMEA 0183 (2000)
ITU-R M.825-3
IEC 61106-1 (1996)
IEC 60 945 (1996)
ITU-R M.1084-3
For MX420, see separate specifications

MX535A



MX500 SPECIFICATIONS

GENERAL

Position presentation	Lat/Lon, UTM and user-defined GRID (option)
Position Resolution	4 decimal places (Lat/Lon)
Waypoints	2000 waypoints with 20-character alphanumeric names and icon
Routes	100 routes with a dynamic number of waypoints; up to 2000 waypoints between all routes
Special Features	GOTO, Mark and MOB, 3-D Panoramic steering display, Tide, Speed Graph, Sun & Moon Almanac, and Wind Calculations.
Display	3.8 inch B/W STN, 320 x 240 pixels, back-lit LCD display
Dual Control	Master/Slave/Repeater configuration with up to 4 Slaves/Repeaters via high-speed LAN
Languages	English, Danish, Dutch, French, Finnish, German, Italian, Spanish, Swedish
CPU	Intel PXA255 XScale Processor
Memory Size	Data: 32MB RAM
Program	32MB (FLASH)
Data Storage	Stores waypoints, routes, configurations and track memory in USB memory stick (FAT32 format), or built-in Flash RAM

POWER

Input Voltage	10.5 to 32 VDC, 10 watts
Grounding	Chassis isolated from electrical ground

PHYSICAL

Dimensions	198mm (w) x 102mm (h) x 96mm (d) 7.7" (w)x 4.0" (h) x 3.8"(d)
Mounitng	Yoke or optional flush mount

ELECTRICAL INTERFACE.

Ports	2-EN-61162-1 compliant user programmable I/O NMEA data ports and 2 I/O. Ports dedicated to smart antenna or black box receiver, USB and LAN port
NMEA Input	DPT, DBS, DBT, DBK, GLL, HCC, HDM, HDT, MMB, MWV, RMA, RMC, VHW, VTG, VWR, WPL, XDR, GSA, GST, GRS, GSV, GBS*, RTE, ROT, DTM, GNS & WPT
NMEA Output	NMEA 0183 V2.3: APA, APB, BOD, BWC, BWR, GGA, GLL, GRS, HSC, MSK, MSS, RMB, RMC, RNN, RTE, SNU, VDR, VHW, VPW, VTG, WCV, WPL, XTE, ZDA, ZTG, GBS, HDT, ROT, DTM, GNS, GST, GSV & WPT
Pulse Log Emulation	1 - 30,000 pulse per NM
Reprogramming	Field programmable flash ROM using the USB port

CONNECTORS

1x -12-pin connector for power and data
1x -10-pin connector for antenna
1x - 8-pin connector for auxiliary data
1x - RJ-45 for LAN
1x - USB (front)

ENVIRONMENTAL

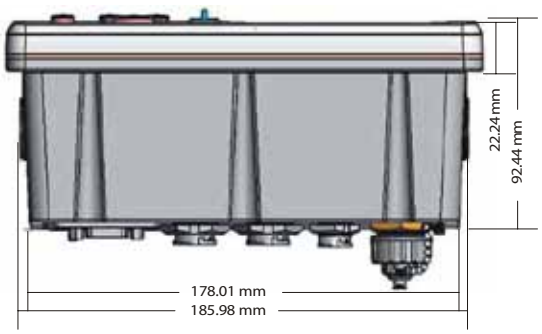
Operating Temperature	-21°C to +55°C
Storage Temperature	-30°C to +70°C
Humidity/EMI/Vibration	IEC/EN 60945ed4
Housing	Splash proof
Compliance	IMO: MSC 112 (73), IEC 61108-1, IEC 61162-1, IEC, 60945 Ed. 4
FCC	Meets FCC Part 15, Subpart B
Type Approval	CE, USCG, Wheelmark

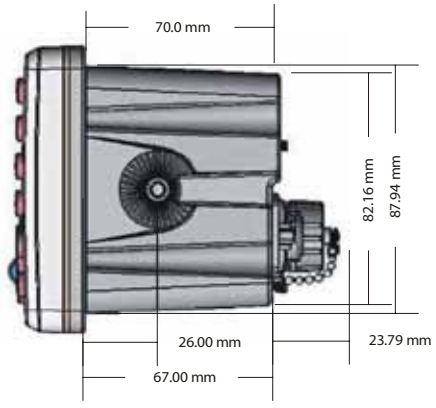
GPS- DGPS RECEIVER

The MX500 connects to the MX421-10, MX421B-10 or MX521A smart antennas, MX525A Black Box DGPS receiver or MX575A DGPS Compass

* Navico Proprietary RAIM message ($PMVXG, GBS)

MX500





MX510 AND MX512 SPECIFICATIONS

GENERAL

Position presentation	Lat/Lon, UTM and user-defined GRID (option)
Position Resolution	4 decimal places (Lat/Lon)
Waypoints	2000 waypoints with 20-character alphanumeric names and icon
Routes	100 routes with a dynamic number of waypoints; up to 2000 waypoints between all routes
Special Features	GOTO, Mark and MOB, 3-D Panoramic steering display, Tide, Speed Graph, Sun & Moon Almanac, and Wind Calculations.
Display	5.7inch B/W STN, 320 x 240 pixels, back-lit LCD display
Dual Control	Master/Slave/Repeater configuration with up to 4 Slaves/Repeaters via high-speed LAN
Languages	English, Danish, Dutch, French, Finish, German, Italian, Spanish, Swedish (Some screens may still be in English)
CPU	Intel PXA255 XScale Processor
Memory Size	Data: 32MB RAM Program: 32MB (FLASH)
Program	32MB (FLASH)
Data Storage	Stores waypoints, routes, configurations and track memory in USB memory stick (FAT32 format), or built-in Flash RAM

POWER

Input Voltage	10.5 to 32 VDC, 10 watts
Grounding	Chassis isolated from electrical ground

PHYSICAL

Dimensions	295mm (w) x 150mm (h) x 105mm (d) 11.6 in (w) x 5.9 in (h) x 4.1 in (d)
Mounitng	Yoke or optional flush mount

ELECTRICAL INTERFACE.

MX510 Ports	2-EN-61162-1 compliant user programmable I/O NMEA data ports and 2 I/O. Ports dedicated to smart antenna or black box receiver, USB and LAN port
MX512 Ports	9-EN-61162-1 compliant NMEA Ports
NMEA Input	DPT, DBS, DBT, DBK, GLL, HCC, HDM, HDT, MMB, MWV, RMA, RMC, VHW, VTG, VWR, WPL, XDR, GSA, GST, GRS, GSV, GBS*, RTE & ROT
NMEA Output	NMEA 0183 V3.0: APA, APB, BOD, BWC, BWR, GGA, GLL, GRS, HSC, MSK, MSS, RMB, RMC, Rnn, RTE, SNU, VDR, VHW, VPW, VTG, WCV, WPL, XTE, ZDA, ZTG, GBS, HDT & ROT
Pulse Log Emulation	1 - 30,000 pulse per NM
Reprogramming	Field programmable flash ROM using the USB port

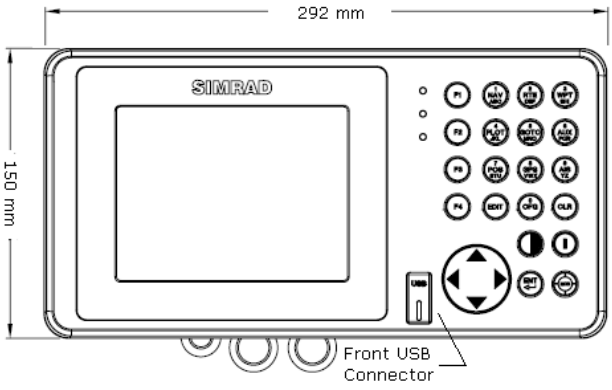
CONNECTORS

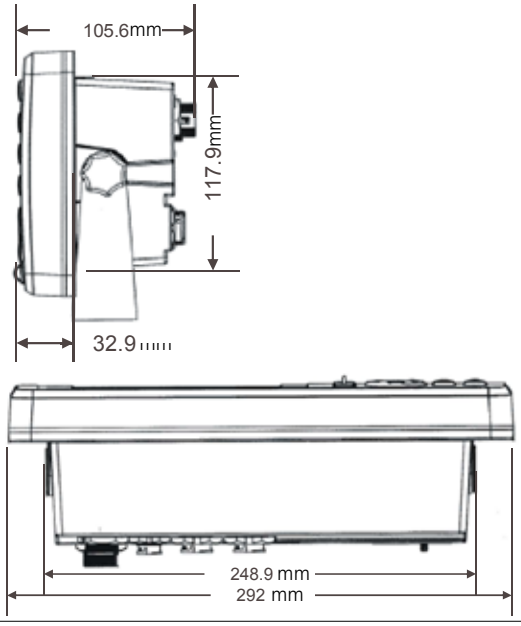
MX510/MX512	1x -12-pin connector for power and data 1x -10-pin connector for antenna 1x - 8-pin connector for auxiliary data 1x - RJ-45 for LAN 2 x - USB
MX512 (only)	1 VGA Connector 1 44-Pin DATA I/O Connector

ENVIRONMENTAL

Operating Temperature	-21°C to +55°C
Storage Temperature	-30°C to +70°C
Humidity/EMI/Vibration	IEC/EN 60945ed4
Housing	Splash proof
Compliance	IMO: MSC 112 (73), IEC 61108-1, IEC 61162-1, IEC 60945 Ed. 4
FCC	Meets FCC Part 15, Subpart B
Type Approval	CE, USCG, CCS, Wheelmark

MX510 AND MX512





MX525A AND MXB5 SPECIFICATIONS

GENERAL

Reciever Type	L1, C/A code, 1.575 GHz Frequency
Channels	12-channel, parallel tracking (10-channel when tracking WAAS/ EGNOS/MTSAT)
Position Update Rate	1 Hz default, 5-10 Hz (optional)
Horizontal Accuracy	<1 m 2D-RMS* (DGPS) <5m 2D-RMS** (GPS no S/A)
Cold Start	60 s (no almanac)
Satelite Reacquisition	<10 s (Typical)
Antenna Input Impetance	Antenna Input Impetance

BEACON SENSOR SPECIFICATIONS

MSK Bit Rates	50, 100 and 200 bps
Channels	2-channel, parallel tracking
Frequency Range	283.5 to 325 kHz
Operating Modes	Automatic using smart beacon feature or manual
Sensitivity	2.5µV/m for 6 dB SNR @ 200 bps
Dynamic Range	100 dB
Ajacent Channel Rejection	61 dB @ f ° ± 400 Hz

COMMUNICATIONS

Serial Port	2 duplex NMEA 0183 Ports
Baud Rates	4800 (default), 9600, 19200
Data I/O Protocol	NMEA 0183 V3.0
NMEA Sentences	GGA, GSA, GST, GSV, RMC, VTG, GRS, ZDA, GBS ***
Correction I/O Protocol	RTCM SC-104

ENVIRONMENTAL

Operating Temperature	-30°C to +55°C
Storage Temperature	-40°C to +85°C
Humidity (MX525A Console)	95% non-condensing, protected category
Splashproof DGPS Combined Antenna (MXB5)	"Exposed Category" IEC 60945 ed4

ELECTRICAL MX525 A CONSOLE

Operating Voltage	10.5 to 32 VDC
Reverse Polarity Protection	YES
Power Consumption	< 3 W
Current Consumption	< 200 mA @ 12 VDC

ELECTRICAL DGPS COMBINED ANTENNA (MXB5)

Operating Voltage	5 to 12 VDC
Power Consumption	< 1 W
Coax Cable (not included)	< 16 dB loss @ 1.575 GHz (50 Ohms)

MECHANICAL MX525 A CONSOLE

Dimensions	13.5 cm (l) x 11.4 cm (w) x 3.7 cm (h)
Weight	0.8 kg
Power/Data Connector	10 pin (male)
Antenna Connector	TNC (female)
Mounting	U-Bracket

MECHANICAL DGPS COMBINED ANTENNA (MXB5)

Dimensions	14 cm (d) x 10.2 cm (h)
Weight	0.9 kg
Antenna Connector	TNC (female)
Mounting	U-bracket mount for the MX525 Console, 1"-14 TPI for MXB5 antenna

CERTIFICATION

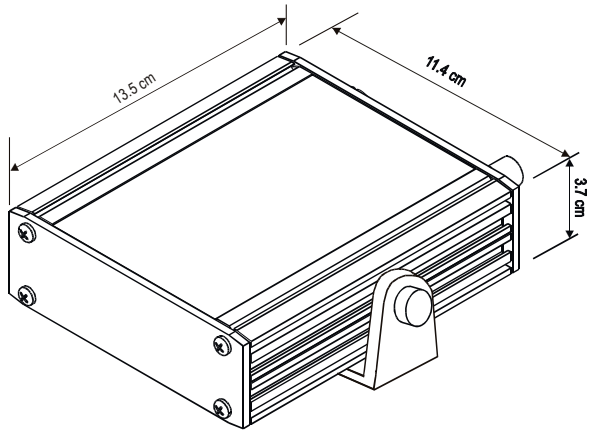
BSH and Wheelmark approval IMO MSC 112(73) CE and FCC

* Depends on multipath environment, number of satellites in view, baseline length (for local services), and ionospheric activity

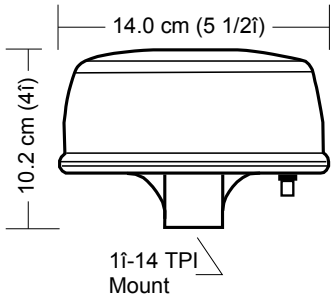
** Dependent upon ionospheric activity and multipath

*** NAVICO Proprietary RAIM message ($PMVXG, GBS)

MX525A CONSOLE



MXB5 DGPS ANTENNA



MX421B-10 AND MX521A SPECIFICATIONS

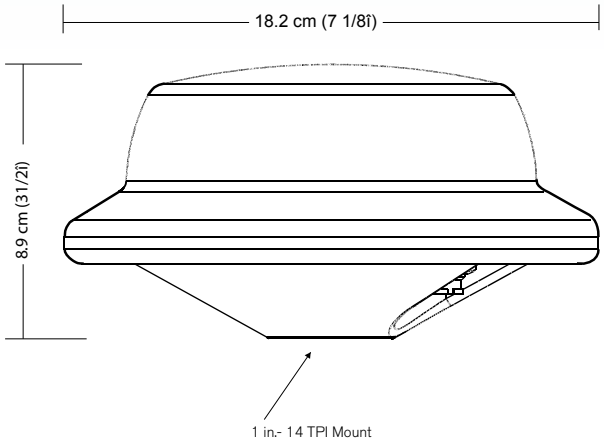
	MX421B-10	MX521A
GENERAL		
Reciever Type	L1, C/A code, 1.575 GHz Frequency	L1, C/A code, 1.575 GHz Frequency
Channels	12-channel, parallel tracking	12-channel, parallel tracking (10-channel when tracking WAAS/EGNOS/MTSAT)
Position Update Rate	1 Hz default, 5 Hz (optional)	1 Hz default, up to 10 Hz (optional)
Horizontal Accuracy	<1 m RMS* (DGPS) <3m RMS** (GPS no S/A)	<1 m 2D-RMS* (DGPS) <5m 2D-RMS** (GPS no S/A)
Cold Start	60 s (Typical-no almanac)	60 s (Typical-no almanac)
Satelite Reacquisition	<10 s (Typical)	<10 s (Typical)
BEACON SENSOR SPECIFICATIONS		
MSK Bit Rates	50, 100 and 200 bps	50, 100 and 200 bps
Channels	2-channel, parallel tracking	2-channel, parallel tracking
Frequency Range	283.5 to 325 kHz	283.5 to 325 kHz
Operating Modes	Automatic and manual	Automatic using built-in smart beacon feature or manual
Sensitivity	2.5µV/m for 6 dB SNR @ 200 bps	2.5µV/m for 6 dB SNR @ 200 bps
Dynamic Range	100 dB	100 dB
Ajacent Channel Rejection	61 dB @ f ° ± 400 Hz	61 dB @ f ° ± 400 Hz
COMMUNICATIONS		
Serial Port	2 duplex NMEA 0183 Ports	2 duplex NMEA 0183 Ports
Baud Rates	4800 (default), 9600, 19200	4800 (default), 9600, 19200
Data I/O Protocol	NMEA 0183 V3.0	NMEA 0183 V3.0
NMEA Sentences	GGA, GSA, GST, GSV, RMC, VTG, GRS, ZDA, GBS ***	GGA, GSA, GST, GSV, RMC, VTG, GRS, ZDA, GBS ***
Correction I/O Protocol	RTCM SC-104	RTCM SC-104
ENVIRONMENTAL		
Operating Temperature	-25°C to +60°C	-30°C to +70°C
Storage Temperature	-40°C to +85°C	-40°C to +85°C
Splash Proof	"Exposed Category" IEC 60945 ed4	"Exposed Category" IEC 60945 ed4
ELECTRICAL		
Input Voltage	10.5 to 32 VDC	10.5 to 32 VDC
Reverse Polarity Protection	YES	YES
Power Consumption	< 3 W	< 3 W
Current Consumption	< 230 mA @ 12 VDC	< 230 mA @ 12 VDC
MECHANICAL		
Dimensions	Height 8.9 cm (3.5") Diameter 18.2 cm (7 1/8")	Height 10.2 cm (4") Diameter 18.2 cm(7 1/8")
Weight	660 g (MX421B-10) 200 g (MX421-10)	0.5 kg (1.2 lbs.)
Power/Data Cable	10-wire Shielded twisted pair (not included) available in 20, 40, 60, 80 and 90 meter	10-wire Shielded twisted pair (not included) available in 20, 40, 60 and 80 meter
Antenna Connector	10 pin (male)	10 pin (male)
Mounting	1 inch - 14 TPI Pole Mount	1 inch - 14 TPI Pole Mount
CERTIFICATION		
	BSH and Wheelmark approval IMO MSC 112(73) CE and FCC Compliant, CCS	BSH and Wheelmark approval IMO MSC 112(73) CE and FCC Compliant, CCS

* Depends on multipath environment, number of satellites in view, baseline length (for local services), and ionospheric activity

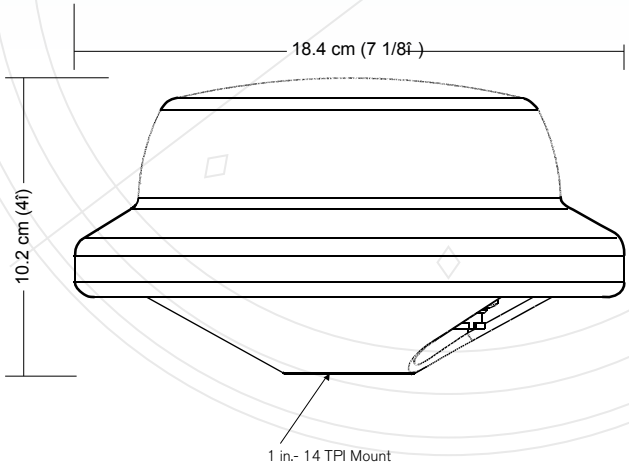
** Dependent upon ionospheric activity and multipath

*** NAVICO Proprietary RAIM message ($PMVXG, GBS)

MX421B-10



MX521A



MX575A SPECIFICATIONS

GENERAL

Reciever Type	L1, C/A code, with carrier phase smoothing
Channels	12-channel, parallel tracking (10- channel when tracking SBAS)
Position Update Rate	1 Hz default (Position) up to 10 Hz heading and position output (optional)
Horizontal Accuracy	< 1 m 95% (DGPS)* < 5 m 95% (autonomous, no SA)**
Heading Accuracy	< 0.5 degrees rms.
Rate of Turn	90°/s max
Pitch / Roll Accuracy	< 1 degree rms
Start-Up Time	< 60 s typ.
Heading Fix	< 20 s
Satellite Reacquisition	< 1 s

DIFFERENTIAL BEACON SENSOR SPECIFICATIONS

Channels	2-channel, parallel tracking
Frequency Range	283.5 to 325 kHz
Operating Modes	Automatic and Manual
Sensitivity	2.5µV/m for 6 dB SNR @ 200 bps
Dynamic Range	100 dB
Ajacent Channel Rejection	61 dB @ f ° ± 400 Hz offset

COMMUNICATIONS

Serial Ports	3 full duplex RS-232 & 2 half-duplex RS-422
Isolation	All serial ports optically isolated from power supply
Baud Rates	4800, 9600, 19200
Data I/O Protocol	NMEA 0183 V3.0
Correction I/O Protocol	RTCM SC-104,
NMEA Heading Messages	GPHDT, GPROT, PSAT, HPR, GGA, VTG, ZDA, GSA, GSV, GST, GBS***, GRS

ENVIRONMENTAL

Operating Temperature	-30°C to +70°C
Storage Temperature	-40°C to +85°C
Humidity	100% condensing
Dimensions:	60 cm (l) x 16 cm (w) x 18 cm (h) (Not including mounts)
Weight:	1.5 kg \ 3.31 lbs

POWER

Input Voltage	10.5 to 32 VDC
Isolated	Power supply isolated from serial ports
Reverse Polarity Protection	Yes (but not reverse polarity operation)
Power Consumption	< 4.5 W
Current Consumption	< 360 mA @ 12.0 VDC

MECHANICAL

Dimensions	60 cm (l) x 16 cm (w) x 18 cm (h) (Not including mounts)
Weight	< 1.5 kg
Power Data Connector	18-pin, Environmentally sealed

MOUNTING OPTIONS

1"-14 TPI Pole Mount or Fixed Mount Brackets (mounting brackets are provided)

* Depends on multipath environment, number of satellites in view, satellite geometry, baseline length (for local services), and ionospheric activity

** Depends on multipath environment, number of satellites in view, and satellite geometry

*** NAVICO Proprietary RAIM Message ($PMVXG, GBS)

Sales and Service Worldwide

EUROPE/MIDDLE EAST/ AFRICA

ALGERIA
Algerian Technical Services & Systems
Lotissement El Bina 142
Dely Ibrahim - Alger 16302
Tel.: 213 21 37 05 56
Fax.: +213 21 37 05 86

ANGOLA
JEMBAS-Assistència Tecnica Liimitada, Largo Do Soweto 88
Luanda
Tel.: +244 222 637 000
Fax: +244 222 637 038

BENELUX
Simnav BV
Van Hennaertweg 17a
2952 CA Alblasserdam
Tel.: +31 78 6921900

BULGARIA
BS Marine EOOD
Bulstar Str #1
8140 Atia Bulgaria
Tel.: +359 550 422 42

CROATIA
Almar d.o.o.
Porec - Kamenarija 12
52452 Funtana
Tel.: +385 52 445 005
Fax: 385 52 445 276

DENMARK
See Germany

ESTONIA
Admiral Trade OÜ
Regati 1
11911 Tallinn
Tel.: +372 639 89 46
Fax: 372 639 89 30

FINLAND
At Marine OY
Mesikukantie 16
01300 Vantaa
Tel.: +35 89 5494 2600
Fax: +35 89 5494 2700

FRANCE
Navico France S.A.
Parc d'Activités Ragon,
23 Avenue Pasteur
44 119 Treillieres
Tel.: +33 2 28 01 23 01
Fax: +33 2 28 01 21 43

GERMANY & AUSTRIA
Navico GmbH
Carl-Friedrich-Gauss Strasse 2
24837 Schleswig
Germany
Tel.: +49 4621 96130
Fax: +49 4621 961329

GREECE & CYPRUS
Aegean Electronics S.A.
4, Zosimadon Street.
185 31 Piraeus
Greece
Tel.: +30 210 413 7269
Fax: +302 10 413 7270

ICELAND
Fridrik A. Jonsson EHF
Akralind 2
210 Kopavogur
Tel.: +354 552 2111
Fax: +354 552 2115

ISRAEL
P. Fischeles
Building 62. Ma'agan Hadayig
Kyshin
26298 Haifa bay. Haifa.
Tel.: +97 25444 19379

ITALY
Navico Italia Srl.
Via Benadir 14
20132 Milan
Tel.: +39 02 26149517
Fax: +39 02 8970035

LEBANON & SYRIA
Selcom Marine Sarl.
P.O. Box 55541
Dekwaneh Main Street
Beirut
Lebanon
Tel.: +961 149 1489
Fax: +961 149 5325

MALTA
Medcomms Ltd
4 Msida Rd.
Gzira GZR03
Tel.:+356 21 335521
Fax: +356 21 310820

MOROCCO
Soremar
17 Rue Le Catelet,
Edif. Emilie Zola
21900 Casablanca
Tel.: +212 22 24 82 45/49
Fax: +212 22 24 83 36/52

NORWAY
ProNav AS
Hovlandsveien 52
N-4370 Egersund
Tel.: +47 51 46 43 00

POLAND
Escort Ltd. Electronics Syst.
Grudziadzka 3
70–130 Szczecin
Tel.: +48 91 43 10 400
Fax: +48 91 48 24 777

PORTUGAL
Nautel - Sistemas Electronics Lda.
Rua Fernando Mendes Pinto 46
1400-146 Lisboa
Tel.: +351 21 300 70 30
Fax: +351 21 300 70 39

ROMANIA
Navtron Srl
Str. Vasile Marcovici nr. 7
9100130 Constanta
Tel.: +40 241 545 650
Fax: +40 241 555 582

RUSSIA
Simbia Engineering Company Ltd
4A Verhneozernaya Str.
236018 Kaliningrad
Tel.: +7 0112 215492
Fax: +7 0112 365380

SOUTH AFRICA
Marine Radio Acoustic Devices
P.O. Box 12076
N1 City 7463
Cape Town
Tel.: +27 21 559 4003
Fax: +27 21 559 2752

SPAIN
Navico Marine Electronics S.L.
Pol. Ind. Finestrat nave 14
Avda. Pais Valenzia 28
03509 Finestrat (Alicante)
Tel.: +34 902 350 750
Fax: +34 902 350 950

SWEDEN
Sportmanship Marin AB
Bolshedens Industriväg 30
427 50 Billdal
Tel.: +46 31 726 14 00

SWITZERLAND
Marine Parts Technics AG
In der Au 5
CH-8406 Winterthur
Tel: +41 52 203 66 55
Fax: +41 52 203 66 56

TUNISIA
Méditerranée Services
Résidence Du Lac Bloc D, no 11
1053 Les Berges Du Lac
Tel.: +216 71 86 02 01
Fax: 216 71 86 10 23

TURKEY
Promar Marine Equip. Ltd.
Igrip Sokak Gul. Apt. No: 7/2
81030 Fenerbache (Istanbul)
Tel.: +90 216 3460 894
Fax: +90 216 3461 493

UNITED ARAB EMIRATES
Emphor FZCO
P.O. Box 61232
Jebel Ali Free Zone
Dubai
UAE
Tel.: +97 148 830 233
Fax: +97 148 830 133

UNITED KINGDOM & IRELAND
Navico Ltd (UK)
Premier Way, Abbey Park
Romsey, Hampshire
UK, S051 9DH
Tel.: +44 1794 51 0010
Fax: +44 1794 51 0006

ASIA PACIFIC

AUSTRALIA
Navico Australia Pty. Ltd.
Unit 5, 12 Mars Rd,
Lane Cove NS W 2066
Tel: +02 9936 1000
Fax: +02 9936 1001

CHINA & HONG KONG
CITE Limited
Rm C-E, 16/F, Yan's Tower
26-27 Wong Chuk Hang Road
Aberdeen
Hong Kong
Tel.: +852 2552 0178
Fax: +852 2873 0679

Peaceful Marine Electronics Co., Ltd.
FRoom 1002 Unit 2
No.32 XiAn Road
Shahekou District
Dalian China 116021
Tel: +86 411 84643892

INDIA
Elektronik Lab
R/13 Navroz Baug, Lalbaug,
Mumbai 400012
Tel: +91 2224 71 5115

Elcome Marine Services Private Limited
Great Eastern Summit "A"
11th Floor, Plot No. 56, Sector -15
C.B.D. Belapur,
New Mumbai 400 614
Tel: +91 22 676 18000

JAPAN
KGK JAPAN
Relax Building 7F, 2-5-15,
Ogi-Cho, Naka-Ku, Yokohama,
231-0027, Japan
Tel: +81 45 664 7318
Fax: +8145 664 7319

MALDIVES
Maizan Electronics Pte. Ltd
Henveyru, 08 Sosunmagu
Male' 20012,
Tel: +960 332 3211

NEW CALEDONIA
Altomarine S.A.R.L.
ZT Nouville Plaisance
9 Rue Capitaine BOIS
98846 Noumea BP 14348
Tel: +687 259612
Fax: +687 254330

NEW ZEALAND
Advance Trident Ltd
383 New North Road
Kingsland, P.O. Box 4174
Auckland
Tel.: +64 9 845 5347
Fax: + 64 9 845 5348

PHILIPPINES
Norwegian Marine Consultancy Inc.
Bldg. 1, Cebu yacht Club
Pusok, Lapu Lapu City 6015
Tel.: +63 32 34 00 292
Fax: +63 32 34 07 303

SINGAPORE, MALAYSIA, PHILIPPINES & VIETNAM
Jason Electronics Pte Ltd
Blk 194 Pandan Loop #06-05
Pantech Industrial Complex
Singapore 128383
Tel.: +65 6 872 0211
Fax: +65 6 872 1800

SRI LANKA
International Marine Services
420/23/B1, Welipara,
Thalawathugoda
Sri Lanka
Tel.: +94 717 262 233

SOUTH KOREA
Turn-On Electronics Co.
7th fl. Dong-A Ilbo Bldg.
53-11, 4-KA
Choongang-Dong
Choong-Ku, Busan
Tel.: +82 51 462 3930
Fax: +82 51 462 3089

TAHITI - FRENCH POLYNESIA
Tahiti Sport S.A.
P.O. Box 62
98713 Papeete
French Polynesia
Tel.: +689 50 59 59
Fax: +689 42 17 75

TAIWAN
Dragon & Elephant Enterprise Co. Ltd
12F-4, No. 251
Min Chuan 1st Road
Kaohsiung
Taiwan R.O.C.
Tel.: +886 722 72887
Fax: +886 722 72910

THAILAND
Electrical Marine Co.Ltd
Phuket Boat Lagoon
20/9-10 Moo
Thepkasattri Road,
Koh Kawe, Muang
Phuket 83200
Tel.: +66 76 239 112
Fax: +66 76 239 058

VIETNAM
AMI International Pte Ltd.
Tel.: +65 67 75 00 81
Fax: +65 67 79 78 56

AMERICAS

ARGENTINA
R.C. International
Av. Corrientes 3150 13F
1193 Buenos Aires
Tel.: +54 11 4866 0430
Fax: +51 11 4862 0430

BRAZIL
Electra Service
P.O. Box 111
11410-971 Guarujà
Sao Paulo
Tel.: +55 3354 3599
Fax: +55 3354 3471

CHILE
Robinson Marine Electronics S.A.
Avda. Vitacura 3568 OF 502
Casilla 19012 Cooreo 19
Vitacura Santiago
Tel.: +56 2 207 3059
Fax: +56 2 207 2695

URUGUAY
Electromaritima Uruguaya Ltda
Guatemala 1260
11800 Montevideo
Tel.: +59 82 9247 789
Fax: +59 82 9247 138

USA, CANADA & MEXICO
Navico
410 Amherst Street
Suite 110
03063 Nashua, NH
USA
Tel.: 1-800-628-4487
Tel.: +1 603-324-2042

Navico Torrance
23868 Hawthorne Blvd.,
Suite 201
Torrance, CA 90505
Tel.: +1 310 791 8213
Fax: +1 310 791 6108